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THE ANTIQUARY'S BOOKS

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ROMANO-BRITISH BUILDINGS AND EARTHWORKS

ROMANO-BRITISH BUILDINGS AND EARTHWORKS

BY

JOHN WARD, F.S.A.

AUTHOR OF "ROMAN FORT OF GELLYGAER"
"ROMAN ERA IN BRITAIN" ETC.

WITH NUMEROUS ILLUSTRATIONS BY THE AUTHOR

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PREFACE

IT was originally intended that this should be a general work on Roman Britain, but it was soon evident that it was impossible to compress so large a subject into a volume of this size, and at the same time do reasonable justice to that phase of it—the towns, forts, houses, and other structural remains—which in so marked a manner has been enlarged and modified by the systematic use of the spade during the last quarter of a century. I was on the point of abandoning it, when I chanced to meet the late Mr. George E. Fox, F.S.A., in whose death archaeology has received a severe blow, and, mentioning the circumstance, he suggested that I should confine myself to the architectural side of the subject, as such a work was urgently needed. This was a scattering of seed upon congenial ground, for it was precisely the 'major monuments' of Roman Britain which especially interested me.

The aim of the book is twofold: it describes the remains that come within its scope, and it essays the more difficult task of their interpretation. But it is inevitable that with the present pace of archaeological research many of the conclusions here set forth will have to be modified in the course of very few years.

The work is mainly a compilation—how otherwise could it be? But here and there it will be found that I have reason to modify the conclusions of others or to differ from them. And

if considerable space has been given to the discoveries at Silchester, this is inevitable, for no archaeological research has thrown greater light on Roman Britain than the twenty-seven diggings on the site of *Calleva*.

The plans are in most instances simplified from the originals by the omission of minor details and confusing structural alterations and additions, in order to present their salient features; and as far as possible the buildings of different kinds are shown to common scales so as to render their comparative study easy.

I am indebted to many for various services which have contributed to the usefulness of this work: to Dr. Joseph Anderson, F.S.A.; Prof. R. C. Bosanquet; Dr. F. Haverfield; Mr. J. P. Gibson; the late Mr. G. E. Fox, M.A.; Mr. F. A. Bruton, F.S.A.; Mr. James Curle, F.S.A.; Mr. James Barbour, F.S.A.Scot.; Mr. A. E. Hudd, F.S.A.; Dr. T. Ashby, F.S.A., Rome; Mr. Frank King; Mr. F. Gerald Simpson; Mr. St. George Gray, F.S.A.; Dr. George Macdonald; Rev. Dr. Cox, F.S.A.; Mr. W. H. Knowles, F.S.A.; Col. C. E. Ruck, F.S.A.Scot.; Mr. Thomas May, F.S.A.Scot.; Mr. Charles Bathurst, M.P., Lydney; Mr. W. Clarke, Llandaff; Mr. L. P. Salmann; Mr. Mill Stevenson, F.S.A.; Mr. W. St. John Hope, M.A.; and to others whose names are referred to in the body of the book. Also to an old friend, Mr. J. W. Stenson, for reading the proof sheets.

JOHN WARD

Cardiff

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ROMANO-BRITISH BUILDINGS AND EARTHWORKS

CHAPTER I

CAMPS

The Camps of Classical Writers and British Examples

THE military works of the Roman era in this country consist of fieldworks or camps, raised during the campaigns against the natives; forts to hold secure what the sword had won; frontier defences, and the fortifications of towns. The first were of a temporary nature. Of the second, many ceased to be occupied when the natives peaceably acquiesced in the new conditions. The frontier defences were maintained to the end, as upon them depended the security of the country; and equally necessary were the walls of the towns to ensure their safety in civil troubles. Broadly speaking, these military works may be divided into 'temporary' and 'permanent.'

It is well known that during an expedition the Roman army in its best period never halted—not even for a single day—without making an entrenched camp or *castra*, a word used only in the plural form. The judicious choice of situations for camps was a distinguishing mark of good generalship. Of Agricola it was said that he marked out the encampments himself, and that "no general had ever shown greater skill in the choice of advantageous situations, for not one of his fortified posts was either taken by storm or surrendered by capitulation." These encampments varied greatly in size. Some were large enough to accommodate an entire army, or a large portion of one; smaller ones served as advanced or exploratory posts; and smaller still, to keep open the communications of the army with

its base. All these fieldworks were of slight construction, consisting essentially of a rampart or breastwork formed of turves or of the upcast from a ditch, the enclosed space containing the tents and baggage of the soldiers. When the camp was intended to last some time—to serve for winter quarters, for instance—the defences were strengthened with palisades and even with towers of timber, and huts of timber or turf took the place of tents.

The Camps of Classical Writers

Of the writers who treated of the art of castrametation as practised by the Romans, and whose works have come down to us, two stand pre-eminent for the fullness of their descriptions: Polybius, the friend of the younger Scipio, in the second century before our era; and the author of a treatise, *De Munitionibus Castrorum*, who is usually called Hyginus, and who probably lived about the time of Septimus Severus (A.D. 193–211). It should be mentioned that the camps of these writers were intended for the accommodation of whole armies (about 20,000 men in the case of Polybius, and almost double that number in the case of Hyginus); whereas most of those which remain in this country are much smaller.

The Polybian camp was simple and symmetrical. The site being selected by a company sent in advance of the army, the position of the general's tent—the *praetorium*—was fixed upon, and was marked by a small flag, and from this point the whole plan was developed. Through it, a straight line was drawn in the intended direction of the camp, and at a certain distance this was crossed by another at right angles. These two lines were termed in the language of the Roman land-surveyors, the *decumanus maximus* and *cardo maximus*, respectively, and they served as the base-lines from which the general outline and internal divisions were determined. The resultant figure was a square, 2150 Roman feet each way, bisected in its 'length' into two equal divisions by the *decumanus maximus*, and in its breadth, or, as the surveyors said, in its 'depth,' into two unequal divisions, by the *cardo maximus*. These lines marked the positions of the chief thoroughfares and of the openings or gates in the rampart through which they passed. The trans-

verse road, which from its importance and superior width was known as the *via principalis*, coincided with the latter of these two lines. The praetorial square occupied the middle of its side next the nearer rampart of the camp, and from its entrance stretched the main longitudinal road, the *via praetoria*. A number of minor ways contributed to divide up the interior

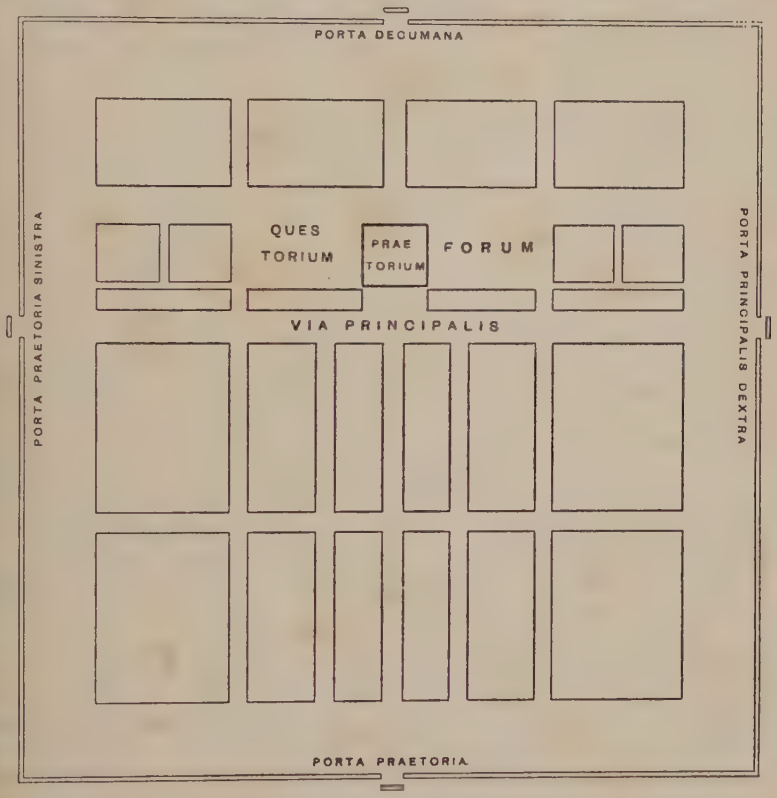


FIG. 1.—Plan of Polybian Camp

into rectangular plots for the tents, and around all, within the rampart, was a clear space or *intervallum*, 200 ft. wide, which facilitated the drawing up of the troops in marching order. The rampart itself was usually formed of the upcast from the ditch which constituted the outer line of defence.

Polybius mentions neither the number nor the names of the gates. We incidentally learn, however, from Livy and other

ancient writers, that they were normally four, and were known as the *portae principales* (*dextra* and *sinistra*), the *porta practoria*, and the *porta decumana* or *questoria*. The first two were those through which the *via principalis* passed, hence were the lateral gates of the camp; the third—the *porta praetoria*—faced the direction the army was going, and so was the front gate; while the last was the back gate. But the identification of these two gates on the plan of the camp is uncertain. According to one view, the *porta praetoria* was the nearest gate to the *praetorium*, that is, the one behind it; according to another, it was the gate towards which it looked. The latter seems to be the more reasonable view.

Such a camp was for a consular army consisting of two legions. If the necessity arose for two of these armies to be encamped within the same lines, Polybius provided that two such camps should be applied back to back with the intervening ramparts suppressed, the result being an oblong enclosure with six gates.

During the three centuries or more between Polybius and the treatise attributed to Hyginus, great changes took place in the Roman military system, and, as might be expected, the Hyginan camp reflected the altered conditions. To us, this form of camp is of peculiar interest, as our Roman camps and forts are more akin to it than to that of Polybius.

The lay-out of the Hyginan camp agreed substantially with that of the Polybian, as a comparison of the two plans will show. We observe in both the same rectangular arrangement and bilateral symmetry, the transverse *via principalis* with central *praetorium* abutting upon it, the longitudinal *via practoria*, and the four gates. But the general form of the Hyginan was an oblong with the corners rounded off; the *intervallum* was greatly reduced in width; the *practorium* was lengthened, pushing forward the *via principalis*; and the *via quintana*, instead of crossing the front part of the camp as of old, was placed behind the *praetorium*. The chief difference, however, between the two types, lay in the altered disposition of the troops and in the smaller space they occupied, as may be gathered from the broad fact that, while the later camp was somewhat smaller than the earlier, it accommodated nearly double the men. The difference is all the more significant when it is noted that the accommodation

for the officers had increased threefold, a change which reflects the altered *status* of the common soldier under the Empire.

The two transverse roads divided the Hyginan camp into three well-defined segments, of which the *praetentura* lay to the front, and the *retentura* to the back, while the middle segment

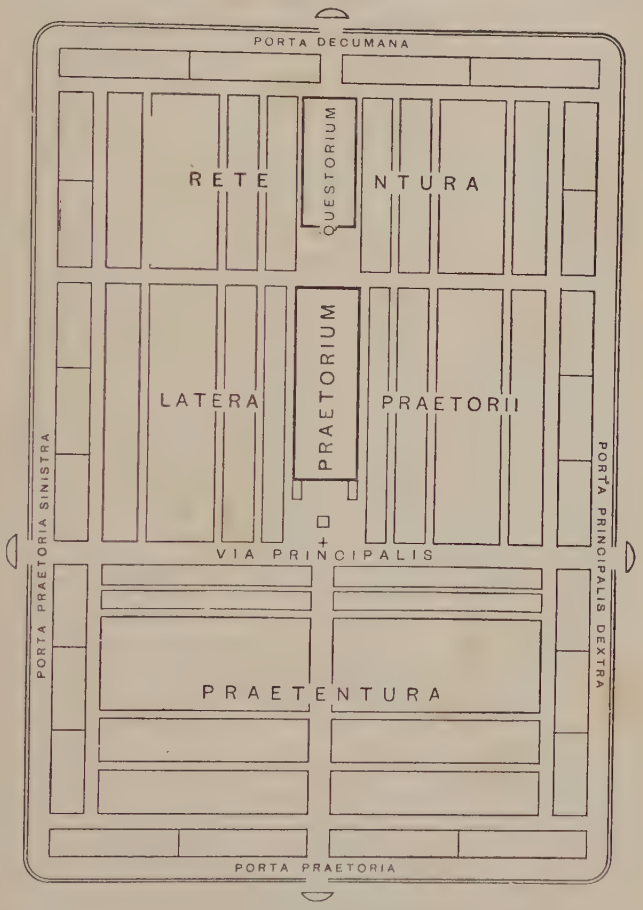


FIG. 2.—Plan of Hyginan Camp

contained the *praetorium* and its *latera*, in which were quartered the general's bodyguard.

In Josephus' *Wars of the Jews* (book iii. chap. v.) we have a graphic sketch of a Roman camp, in which are interspersed those little details which mark it as the description of an eye-

witness. It is especially interesting to us, for he wrote about the time that the earlier camps and forts were constructed in this country.

After describing the discipline and fortitude of the Roman soldiers, he passes to their procedure when in an enemy's land: "They do not begin to fight till they have walled their camp about; nor is the fence they raise rashly made or uneven; . . . The camp is foursquare by measure, and carpenters are ready in great numbers with their tools to erect their buildings for them. As for what is within the camp, it is set apart for tents, but the outward circumference hath the resemblance to a wall, and is adorned with towers at regular distances, where, between the towers, stand the engines for throwing arrows and darts, and for slinging stones, and where they lay all other engines that can annoy the enemy, all ready for their several operations. They also erect four gates, one at every side of the circumference, and these large enough for the entrance of the beasts, and wide enough for making excursions, if occasion should require. They divide the camp within into streets, very conveniently, and place the tents of the commanders in the middle; but in the very midst of all is the general's own tent, in the nature of a temple, insomuch that it appears to be a city built on the sudden with its market-place and place for handicraft trades, and with seats for the officers, superior and inferior, where, if any differences arise, their causes are heard and determined. The camp and all that is in it is encompassed with a wall round about, and that sooner than one would imagine, and this by the multitude and the skill of the labourers; and if occasion require, a trench is drawn round the whole, whose depth is four cubits, and its breadth equal."

Roman Camps in Britain

The remains of the entrenched fieldworks in Britain represent one of the less known branches of the archaeology of the era. They are almost invariably slight and meagre, and there is considerable uncertainty how far we can rely in their case upon rectangular form as an index of Roman work. It is known, for instance, that rectangular entrenched enclosures were raised in pre-Roman times in this country. Then few, if any, of our

supposed Roman camps have been subjected to the spade, and it is doubtful whether their exploration would yield conclusive evidence at all, as the chance of meeting with objects lost during a brief occupancy would be small indeed. It is obviously less a question of excavation than of the systematic study of their visible features and dimensions, correlated with the progress of the conquest, and little has been done in this direction, Again, there is evidence that the Roman armies sometimes made use of British camps, and even occupied them for considerable lengths of time, to judge from the number of Roman relics that have been found in several of them.

Still, in spite of these difficulties, it is highly probable that most of our rectangular, or, more strictly speaking, four-sided, entrenched enclosures, especially the larger ones, are really of Roman origin. The remains of these are very unevenly distributed. They are mostly found in the less cultivated regions of North Britain and Wales, whereas throughout the lowlands of England they are rarely seen. This uneven distribution is mainly due to the unequal advance of agriculture. Some that were noticed by writers of a century or more ago can no longer be discerned, and it is generally found that the lands on which these were situated have since been cultivated. That the remains should have succumbed to the plough is not surprising; for it is evident from the more perfect existing examples that their earthworks were never on the bold scale of most of the undoubted prehistoric ones. Hence their absence from the more cultivated lowlands of England is no proof of their original sparseness there; nor that the earlier Roman generals relied less upon entrenchments than their successors in the west and north.

The examples that remain vary much in size. Some even exceed the dimensions of those described by Polybius and Hyginus; while at the other extreme are the small posts that may have served to keep open communications between the army in the field and its base, or, if near a road, to protect the labourers who constructed it. For the present, we shall disregard these smaller works.

Of the disposition of the troops in the larger camps we know nothing, as only the worn-down entrenchments remain; hence only in their outlines and in the position and the nature of the entrances can we compare them with the *castra* of the

classical writers, and in many instances the agreement is very close. Some of these fieldworks more nearly correspond with the Polybian proportions than with the Hyginan; but as no two quite agree in shape and size, the Roman generals apparently followed no fixed rules in these respects. These British examples appear to have had the rounded corners of the Hyginan camp; on the other hand, the gates of the series in Scotland which have been attributed to Agricola have the straight traverses of the Polybian.

The Scottish examples are certainly the most interesting, and it is fortunate that they were carefully surveyed by General Roy[1] a century and a half ago, when they were in a better state of preservation than at present. These surveys, with their notes, still remain the standard work on the subject.

Whether the camps with the straight traverses, described by Roy, were all raised by Agricola during his Caledonian campaigns, need not detain us. It is sufficient to observe that as far as can be judged from his plates and text, they closely resemble one another, and that to his observant eye they all had the impress of one design and period. His profile of the rampart and ditch of one of these camps, Re-dykes, appears to be typical of the series.

It will be observed that while all these camps are more or less oblong, they differ considerably in size, and some are very irregular. In Fig. 3 A and B are shown the plans of two of the more perfect, one at Towford, a highly symmetrical camp, and Raedykes, the most irregular of the series. It is probable that these irregularities are due to configuration of the sites, and the obliqueness of some of the plans to a faulty setting out of the main lines. The entrances given on the table are those which can still be traced; but only in the two camps named above, and Raedykes, do they represent the original number—six. A comparison of the positions of the existing entrances in the other camps leaves little room for doubt that most, if not all (with the exception of two of the Chew Green group), had the same number similarly placed—one at each end, and two on each side. The six entrances recall the double Polybian camp—the two consular camps combined in one—but they have not arisen from the same cause, as most of the camps are much

[1] *Military Antiquities of the Romans in North Britain.*

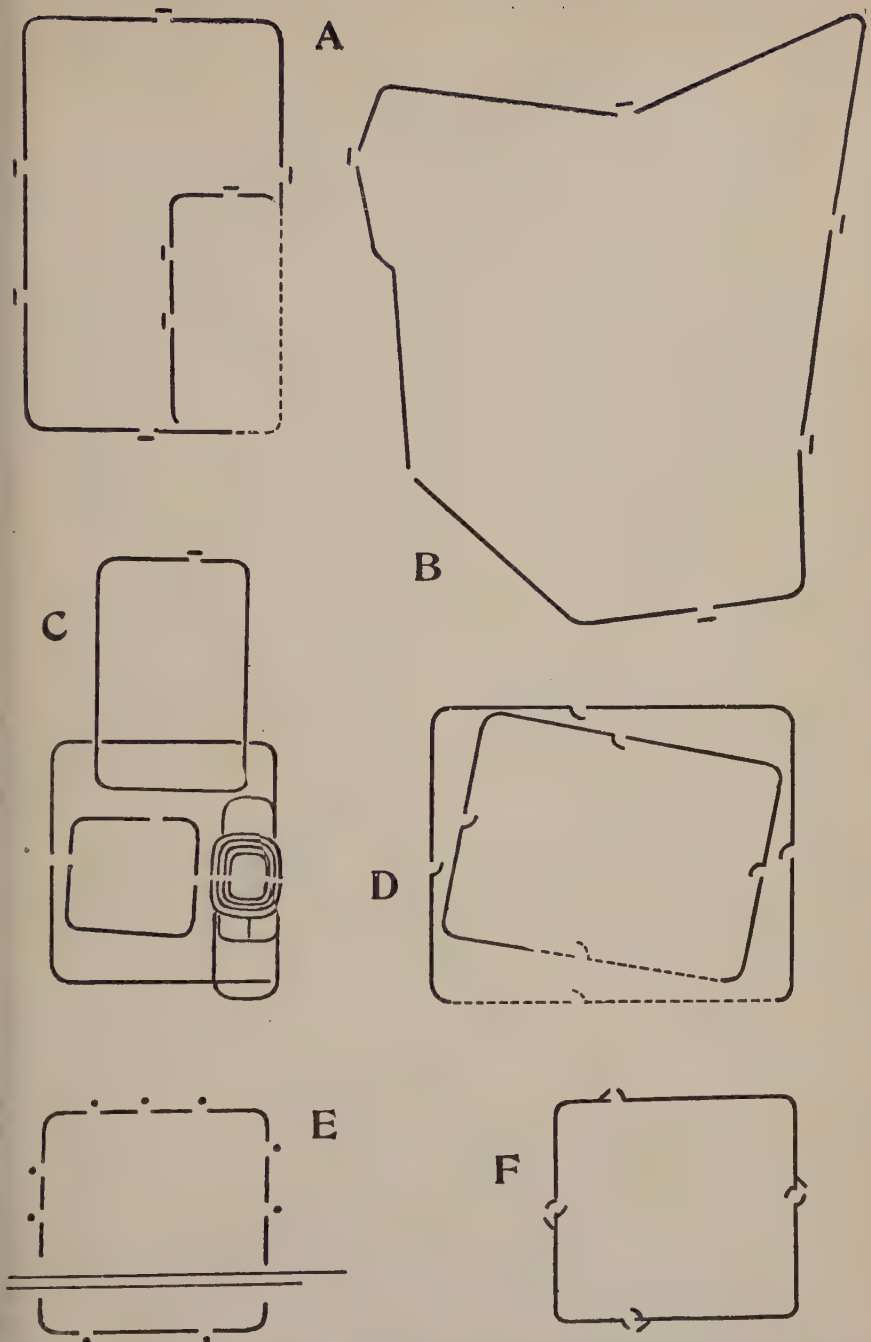


FIG. 3.—Examples of Roman Camps in Britain. All except D, after Roy (800 ft. to 1 in.)

smaller than the single one of Polybius. Of the Chew Green group, No. II. alone has the linear traverses; the other two apparently have unguarded entrances, and probably should not be classed with Roy's Agricolan series.

The following is a list of these so-called Agricolan camps described by the General:—

Camp.	Gates.	Length (Feet).	Width (Feet).	Area (Acres).	Form.
Ardoch I, Perthshire	2	2750	1900	130	Irregular oblong
Grassywalls, Perthshire *	1	2800?	1950	127	Oblique oblong, irregular
Battledykes, Forfarshire	5	2970	1840	118	Irregular oblong
Raedykes, Kincardineshire	6	2200	1700	86	Very irregular oblong
Ardoch II, Perthshire *	4	1910?	1280	58?	Long oblong, regular
Lintrose, Perthshire	1	1850	1200	58	Regular oblong
Kirkboddo, Kincardineshire*	6	2250	1050	54	Long oblong, regular
Cleghorn, Lanarkshire	3	1740	1300	52	Oblique irregular oblong
Tassiesholm, Dumfriesshire	0	1800?	1300?	52?	Regular oblong
Lockerby, Dumfriesshire *	2	1750	1300	51	Oblique oblong
Cannelkirk, Berwickshire	1	1700?	1250?	50?	Rhombic, regular
Kiethick, Forfarshire	1	?	1300	?	End of oblique oblong camp
Towford I, Roxburghshire	5	1700	1060	42	Long oblong, regular
Chew Green I, Northumberland	1	1030	920	22	Short oblong
Chew Green II, Northumberland	1	1000	600	16	Long oblong.
Re-dykes, Aberdeenshire	4	900	650	10	Rhombic
Towford II, Roxburghshire	3	970	440	9	Long oblong, regular
Chew Green III, Northumberland	3	500	475	6	Nearly square

The areas given on the table are only approximate, being based upon the measurements of Roy's plans, some of which are partial restorations,[1] and others are not quite correct as to scale. If we eliminate the last seven camps, which are of very diverse sizes, we have three large camps ranging from 118 to 130 acres each; seven smaller ones from 50 to 58 acres each; and an intermediate one, Raedykes, of 86 acres. It looks as though these sizes had some relationship to one another in their accommodation for the soldiery. We do not know what to deduct for the

[1] Especially those marked * in the table.

intervallum and the streets between the rows of tents; but if they were of similar width in all, as probably they were, the deduction would be relatively greater in proportion to the area in the smaller camps, leaving a space available for the tents in the larger camps about treble that in the smaller, and double that in Raedykes.

Since Roy's time other camps of his Agricolan type have been observed. Maclauchlan surveyed eight or nine small ones along the line of the Wall of Hadrian, ranging from 180 to 390 ft. in length, most of them with four entrances. Two were discovered and trenched at Haltwhistle Burn by Messrs. J. P. Gibson and F. G. Simpson in 1908.[1] They had rounded corners and a single entrance on the south side. The larger was 458 ft. by 250 ft., with a V-shaped ditch, 4 ft. wide and 2 ft. deep, and a small rampart about 8 ft. wide on a foundation of turves, which were heaped up in front, the material above being the upcast of the ditch. Behind the rampart and about 11 ft. from the ditch was a smaller V-shaped ditch. The traverse was of the same construction with a similar external ditch. The smaller camp was 280 ft. by 135 ft., and its defensive lines were similar to those of the larger camp, but it differed in having an annexe on the south with an entrance on its south side.

In the table on the next page, all the examples are from Roy, with the exception of those at Pigwn and Ratby. These camps differ among themselves too much to be regarded as the works of one general, or perhaps of one period. They differ from Roy's Agricolan series in several respects. They are more symmetrical in shape. They are, as a rule, smaller. But the chief points of difference are the number, distribution, and character of their entrances.

Taking the number and distribution of the entrances first: At Dealgin Ross (Fig. 3 F,) there are four, one about the middle of each end, and one on each side, but nearer one end than the other. Three entrances remain in each of the Pigwn camps (D), but almost certainly there were originally four with a similar distribution. One only is to be seen in the largest Chew Green camp (C); but in a camp of this size there must have been more, and its nearly square form suggests four. The next four camps are remarkable for the large number of their entrances,

[1] *The Roman Fort at Haltwhistle Burn*, 47.

and their unequal distribution. Rey Cross (E) appears to have had eleven, three on three sides, and two on the fourth. Kreiginthorp had probably more, as there are four on one side and two on the opposite side, the remaining sides having apparently three each. The unequal distribution at Birrenswark I. and Ratby is even more marked, each having three entrances on one of the long sides, and only one on each of the other sides. The original number of gates in the second Birrenswark camp is doubtful. The third of the Chew Green and the first of the

Camp.	Entrances.	Length (Feet).	Width (Feet).	Area (Acres).	Form.
Pigwn I, Breconshire	4	1452	1254	41	Oblong, regular
Pigwn II, ,,	4	1254	966	28	,, ,,
Dealgin Ross, Perthshire	4	1000	950	21	Nearly square
Chew Green I, Northumberland	1	1030	920	22	,, ,,
Rey Cross, Westmorland	Many	870	870	18½	Square.
Kreiginthorp, ,,	Many	870	870	18½	,,
Birrenswark I, Dumfriesshire	Many	900	670	12	Narrow oblong
Ratby, Leicestershire	Many	930	550	11	,, ,,
Birrenswark II, Dumfriesshire	2?	1000	300	6½	,, ,,
Chew Green III, Northumberland	3	500	475	5	Nearly square
Pickering Moor I, Yorkshire	3	370	360	2¾	,, ,,
Pickering Moor II, Yorkshire	3	750	225	3½	Long and narrow
Pickering Moor III, Yorkshire	4	400	450	3½	Square, with an annexe with two entrances

Pickering Moor groups are squares of similar size, with three gates each. The latter group is remarkable. Its second camp is long and narrow with three gates on one of the longer sides; and the third is square, like the first, with four entrances, one opening into an extension or annexe of similar size and with two external entrances.

The entrances of the two Chew Green and the Ratby camps are apparently simple unguarded openings. Those of Kreiginthorp have the straight traverses of the Agricolan series; while the traverses of Rey Cross and the two Birrenswark camps take

the form of round or oval mounds. The entrances of the remaining camps of the table differ altogether from any we have considered. In the second of the Pickering camps the openings are covered by curved guards or traverses, which are joined to the rampart at one end, the advantage of the arrangement being that the defenders on the traverse were not isolated, but could pass at will to and from the rampart. At Pigwn these guards are internal, instead of external. Roy shows the entrances of the third of the Pickering camps with both external and internal guards, and those of Dealgin Ross with one external and two internal guards.

The camps referred to in the two tables furnish several interesting examples of the successive occupation of the same site. That a well-chosen site should again be selected by an army on its return, or by another marching along the same line, is natural enough. There would be the old camp ready for re-occupation. How often a camp may have been thus used we cannot say. But it must have occasionally happened that the second comers were fewer or more numerous than the first ; and in such case the rule seems to have been to make an entirely new camp. In the Pigwn group, for instance, the smaller and presumably second camp is quite distinct from the larger, and is within it. The two at Ardoch are more remarkable, for not only are they distinct, but they intersect one another, and the constructors of the second, whichever it may have been, did not trouble to level those portions of the first that lay within the new camp. The Chew Green group is a still more remarkable example of successive occupation. It is puzzling why the older entrenchments were not utilized, at least in part. If, as in another instance, the Pickering camps were raised successively, as they appear to have been, why should not the first have sufficed for the later comers, for there is little difference in their sizes ? The only instance of the utilization of a portion of the old lines is at Towford (Fig. 3, A), where we have a smaller within a larger camp, and so arranged that for two of its sides the lines of the second were utilized.

Several of the camps have been enlarged like the smaller Haltwhistle camp, apparently to provide accommodation for additional troops. At Kirkboddo there is an extension about 350 ft. square, with one external entrance, at the south-east

end of the camp; and we have already referred to a similar extension of one of the Pickering camps.

The usual situation for a camp was moderately high ground near a river or a brook, especially where the bank was steep. The actual site was generally tolerably level, or had only a gentle slope; occasionally, however, the ground was very uneven, as at Raedykes, where the camp took in a small hill.

In turning over Roy's plates, it will be noticed that several of his 'Agricolan' camps have associated with them small strongly entrenched posts. At Lockerby, such a post occupies the higher ground about 1000 ft. to the south-east. It is square, with an internal diameter of about 110 ft., and two entrances. At Tassiesholm, there is one of similar shape and size, but with a single entrance, on the higher ground 260 ft. to the south-east. At Ardoch, a smaller one is constructed on the inner side of the south-east rampart of the larger camp. At Cannelkirk, the extremity of a spur of the high ground on which the camp is placed has been strongly fortified by lines of entrenchment across the neck. One considerably larger than any of the above lies within the north-east side of the largest of the Chew Green camps. Besides these, Roy refers to several isolated examples, notably Kaims Castle near Ardoch, with one entrance, and another at Glenlyon, with two.

These posts ranged from about 60 to about 160 ft. square internally. From their careful and strong construction, it is reasonable to think that they were intended for a more or less protracted occupation. That their use was to keep open communications and to overawe the conquered territory is equally reasonable. Those which were associated with the large field-works were, with little doubt, constructed to hold a small detachment left behind by the army when it resumed its march.

The camps and small posts which have engaged the reader's attention are only a few out of the large number of quadrilateral enclosures which are known in Great Britain, and of which many or most are presumably Roman. Dr. Christison gives a list of some ninety examples of these in Scotland alone;[1] and although he doubts or discredits the Roman origin of many of them, it is significant that they are confined to the Lowlands and the eastern counties from the Firth of Forth to Aberdeenshire, just

[1] *Early Fortifications in Scotland.*

the regions where the Roman arms penetrated. Most of the examples he gives are rectangles ranging from 75 to 300 ft. externally, which from their small size may be regarded as posts or outposts. The indistinct traces of small camps may be observed here and there in the vicinity of our Roman roads; the Kreiginthorp and Rey Cross camps, for instance, are on the road from York to Carlisle. The Ordnance Survey sheets are strewn with a large number of camps that are either called Roman

FIG. 4.—Plan of Hod Hill Camp, Dorset. (500 ft. to 1 in.)

or are indicated as such by the style of the lettering; but this attribution rests in many cases upon no better evidence than the popular opinion of their respective neighbourhoods.

As stated in the opening paragraph, the subject has not yet received the careful and comprehensive attention it deserves. But if the admirable scheme of the committee for recording ancient defensive earthworks, appointed by the Congress of

Archaeological Societies, is generally acted upon and carried out, it will provide a magnificent basis for comparative and systematic study, which will place the identification of Roman camps upon a firmer basis and throw much light on the movements of the Roman armies in the conquest of Britain.

A notable example of the Roman adoption and modification of a native camp is Hod Hill, in Dorset (Fig. 4). Here the Romans cut off an approximately rectangular portion within the north-west corner, utilizing the old lines for the north and west sides, and completing the enclosure by their own on the south and east. About the middle of each of the latter sides is a straight entrance, the south one having an oval traverse and probably the east one had a similar traverse that has disappeared. An entrance was cut through the north-west angle of the old lines, and the middle entrance on the east side of the *oppidum* is also Roman. The remains were partially destroyed many years ago, when many Roman relics were found, including coins ranging from Augustus to Trajan.

Little is known of the defences of the alleged Roman camps beyond what can be gathered from the visible features. In the supposed Agricolan camps they consist of a single ditch and rampart of small proportions, together rarely exceeding some 24 or 26 ft. in width, and presumably the latter consists of the upcast from the former. In many of the camps of our second table the defences are bolder and wider ; and still more so in the small posts, some of which had several lines of entrenchment.

The excavations at Birrenswark in 1898 proved that the defences of the two camps were from 40 to 60 ft., according to the slope of the ground ; and that the rampart rested upon a thin layer of clay, the soil above being the upcast from the ditch, with here and there traces of brushwood bonding. The face of the rampart was generally covered with rough pitching, but this was more noticeable in the south camp, in which also were the remains of pitched roads, showing that it can hardly be classed as a mere fieldwork. These camps lie at the foot, on opposite sides, of an isolated hill, on the top of which is a large camp of British type. The lower camps were linked together by a circumvallation that enclosed the hill, and on the west side of this circumvallation are the remains of a strongly entrenched triangular post, and on the east, those of two less strongly protected enclosures. It

would seem that these lower fortifications were Roman siege-works, and that when the hill-fort was captured, the south camp continued to be held for a time to prevent the re-occupation of the former, but not sufficiently long to yield many relics of the occupation.[1]

The statements of classical writers show that the Romans had several methods of constructing their fieldworks. Hyginus, for instance, directs that the rampart " in the more exposed parts should be built of sod or stone, whether rock or rubble. A breadth of eight feet is sufficient, and a height of six feet, and there is made a small breastwork." Where the soil is sandy or stony, he recommends an earthen mound. Vegetius, who wrote about a century and a half later, also refers to the wall of squared sods, and recommends it where only a hasty and slight fortification is required ; but where the ground is loose and sods are not available, he recommends a ditch, 5 ft. wide and 3 ft. deep, with an *agger* formed of the upcast. Where, however, a fierce attack is expected, he directs that the ditch should be 12 ft. wide and 9 ft. deep, and that the soil of the rampart should be confined between two rows of stakes ; and be further protected by stakes pointing forwards. It will be observed that a ditch was not essential ; and this explains the statement of Josephus that " if occasion require, a trench is drawn round the whole, whose depth is four cubits and breadth equal." Two forms of ditch are noted by Hyginus, the ' fastigate ' or V-shaped, and the ' Punic,' with the outer side perpendicular. In any case the result of time and decay would leave only a gentle rise for the rampart, with or without a slight hollow marking a ditch, and only excavation can prove their form and construction.[2]

[1] *Proc. Soc. Ant. Scot.* xxxiii, 198. [2] Chapter III.

CHAPTER II

FORTS AND FORTIFIED TOWNS

Their General Characteristics

THE remains we now consider, differ from the last in their stronger construction, but in reality no sharp line can be drawn between the two. A camp intended to serve for winter quarters would be more strongly constructed than one thrown up during a halt in a march; and it is reasonable to think that some of the strongly entrenched posts referred to in the last chapter were designed to last a war of several campaigns. Moreover, some of the permanent works were originally field-works, modified and strengthened for permanent garrisons. The distinction between forts and fortified towns is perhaps even less marked. It is mainly one of size. Under the former we class the numerous *castella* designed to hold cohorts or *alae*, large or small, and the posts or fortlets only large enough for small detachments; and under the latter, the great legionary fortresses, as Chester and Caerleon, and the 'civil' towns, which were more or less planned on the military model. But the two groups are linked together by a few forts of intermediate sizes, perhaps intended to hold double cohorts. Then, again, some of our older towns began as Roman forts, and it is highly probable that the development from fort to town took place in Roman times; it is also probable that some of the 'civil' towns were at first legionary fortresses, the legions having been early removed to points nearer the advancing frontiers. All these military and quasi-military remains, however, have a family likeness, and even if their vestiges are slight and obscure, they can rarely be confounded with the non-military works of the period, or with those of earlier or later times. Our knowledge of the forts and the fortified towns is almost wholly derived from the study of their

visible remains and the evidence of the spade. Their external defences of ditch and rampart have rarely been effaced by the ravages of time. If they happen to be in the heart of a large town, they may be entirely buried under the accumulated débris of successive buildings. Manchester affords an illustration to the point. The position and limits of *Mancunium*, the fort from which this city took its name, are only indicated by an occasional fragment of its rampart brought to light in some excavation. In more favourable situations, however, the rampart may be a conspicuous object ; but the buildings within its line rarely show as more than faint and confused rises.

FORTS

During the last half century or more, many of these minor strongholds have been systematically excavated. Those which have supplied the most complete plans are Housesteads [1] on the Wall in Northumberland, of which portions were explored at different times—by the Rev. John Hodgson between 1822 and 1833, by John Clayton, F.S.A., between 1849 and 1858, and by the Newcastle Society of Antiquaries in 1898, under the direction of Prof. R. C. Bosanquet ; Birrens [2] in Dumfriesshire in 1895, and Newstead near Melrose, 1905–8, by the Society of Antiquaries of Scotland, the latter under the direction of Mr. James Curle, F.S.A. ; and Gellygaer [3] in Glamorgan by the Cardiff Naturalists' Society in 1899, 1900, and 1901. Six other forts have been excavated by the Scottish Society with results almost as good—Ardoch [4] in Perthshire in 1896–7 ; Camelon [5] in Stirlingshire in 1900 ; Lyne [6] in Peeblesshire in 1901 ; and Castlecary [7] and Rough Castle [8] on the Antonine Wall in 1902–3. Another Antonine fort at Bar Hill [9] was explored by Dr. Macdonald and Mr. A. Park, F.S.A., in 1902. Of the Wall series of forts, Chesters [10] and Great Chesters [11] have been partially explored, the former

[1] *Roman Wall*, Bruce, *Arch. Aeliana*, N.S. xxv, 193.
[2] *Proc. Soc. Ant. Scot.* xxx, 81.
[3] *Roman Fort of Gellygaer*, J. Ward.
[4] *Proc. Soc. Ant. Scot.* xxxii, 399
[5] *Ib.* xxxv, 329.
[6] *Ib.* xxxv, 154.
[7] *Ib.* xxxvii, 268.
[8] *Ib.* xxxix.
[9] *The Roman Forts on the Bar Hill.*
[10] *Arch. Aeliana*, iii (O.S.), p. 142 ; vii, p. 211 ; xiii, p. 374 ; xxiii, p. 268.
[11] *Ib.* xxiv, p. 19.

at different times by Mr. Clayton between 1843 and 1890, and some work has been since done there; and the latter, by Mr. J. P. Gibson in 1894. In less degree, Birdoswald [1] was excavated by Mr. H. Glasford Potter, F.S.A., in 1850. A small fort at Haltwhistle was excavated by the Newcastle Society in 1907–8.[2] A considerable portion of High Rochester,[3] one of the supporting forts of the Wall, was excavated by the fourth Duke of Northumberland, in 1852, and subsequently by the Newcastle Society. This society also laid bare a portion of another fort at South Shields in 1874–5. A small fort at Hardknott [4] in Westmorland was explored by the Cumberland and Westmorland Archaeological Society between 1889 and 1902; in Derbyshire, a fort of similar dimensions, Melandra Castle,[5] by the Glossop Antiquarian Society in 1899 and 1900, and several years later by the Manchester Classical Association; and another at Brough by the Derbyshire Archaeological and Natural History Society [6] in 1903. In Lancashire, excavations were made on the site of an important fort at Ribchester [7] by the Rev. J. Shortt in 1888, and by Mr. J. Garstang in 1898–9; and the Manchester Classical Society has explored another at Castleshaw.[8] At Wilderspool,[9] Warrington, the site of a large fort has been excavated at various times, and especially by Mr. Thomas May since 1895. A small fort at Coelbren [10] in Glamorgan was partially excavated by Colonel W. L. Morgan in 1907; and the Liverpool Association for Research in Wales has in hand a larger one at Caersws, Montgomery.[11] The Roman remains at Cardiff Castle [12] were well revealed during alterations between the years 1890 and 1903; and at the present time the exploration of Pevensey Castle,[13] another Roman coast fort, is in progress. Besides these,

[1] *Arch. Aeliana*, iv (O.S.), p. 63.
[2] *The Roman Fort at Haltwhistle*, Gibson and Simpson.
[3] *Arch. Aeliana*, N.S. i. 69; Bruce, *Roman Wall*, 315.
[4] *Trans. Cumb.* and *Westmor. Arch. Soc.* xii, 375.
[5] *Melandra Castle*, ed. by R. S. Conway.
[6] *Jour. Derbysh. Arch.* and *Nat. Hist. Soc.* xxvi, 177.
[7] *History of Ribchester*, Smith and Shortt. *Roman Ribchester*, J. Garstang.
[8] *First Interim Report*, 1908.
[9] *Warrington's Roman Remains*, T. May.
[10] *Arch. Camb.*, 1907, p. 129.
[11] Report not published.
[12] *Archaeologia*, lvii, p. 336; *Arch. Camb.*, 1908, p. 29. J. Ward.
[13] *Arch. Jour.*, lxv, p. 125.

a few other Roman forts have been, at one time or another, partially explored.

The Roman forts of this country are of two types, the chief distinguishing feature being the presence or absence of bastions or projecting towers. The larger number are of the non-bastioned type, and there is reason to think that they are the older. The distribution of the streets and buildings within these forts has,

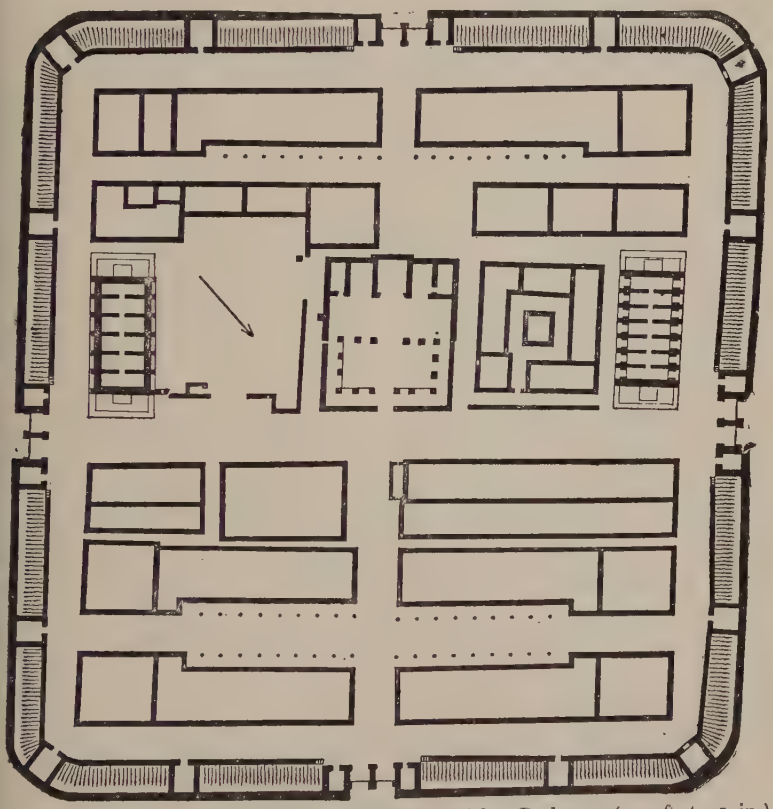


FIG. 5.—Plan of Roman Fort at Gellygaer. After Rodger. (100 ft. to 1 in.)

in spite of a multitude of differences, a general identity, and it resembles that of the Hyginan camp. In fact, we may regard these forts as translations of that camp into stone or other durable materials, provided we look upon them as free, and not as literal, renderings—a point to be carefully noted. It is evident that while their constructors followed traditional lines, they

exercised discretion as to details. Unfortunately we know practically nothing of the internal planning of the bastioned forts.

Gellygaer supplies an excellent plan of a fort of the non-bastioned type, Fig. 5. It is remarkably simple; and its value is enhanced by the absence of alterations and re-buildings, the remains exhibiting all the signs of being of one design and execution. The general bilateral symmetry—the right and left balancing of parts—will be noted. In this respect, as also in the positions of the four gates and of the streets and buildings of the interior, there is a general resemblance to the camps of Polybius and Hyginus. If the reader pursues the comparison further, he will see in the rounded corners, the narrow *intervallum*, and the forward position of the *via principalis*, Hyginan traits, while the approximate squareness of both the fort as a whole and the central block corresponding with the *praetorium* will appeal to him as a Polybian legacy. The four gates and the many towers at regular distances will recall Josephus' vivid description of a Roman camp. So exactly do his words tally with the remains of this fort, that we might almost suppose him to be describing it in its palmy days—how significant of Roman inflexibility, that the description of a camp at the far east of the empire should so well apply to a fortified post amid the hills of its western fringe!

Of the three divisions, the *praetentura*, the *retentura*, and the intervening range of the principal buildings representing the *praetorium* and its *latera* of Hyginus, the first is clearly defined by the *via principalis*—always a well-marked feature in the forts—which separates it from the other two divisions. But in the absence, which is not unusual, of a thoroughfare behind the principal range, answering to the *via quintana*, it is not easy to define the limits of the *retentura*. It is, however, much smaller than the *praetentura*, and this seems to be a characteristic of early work, for this division is also smaller at Brough, Melandra, and Hardknott; whereas farther north, where the forts are presumably of later date, this is exceptional, the *retentura* and *praetentura* being of about equal size at Housesteads, Birdoswald, Birrens, Ardoch, and High Rochester, and the former exceeding the latter at Great Chesters, Newstead, Lyne, and Castlecary.

The position of the *via principalis*, and consequently of the lateral gates, is unusually backward. The street is a trifle nearer the front of the fort than the back, and this is the position at

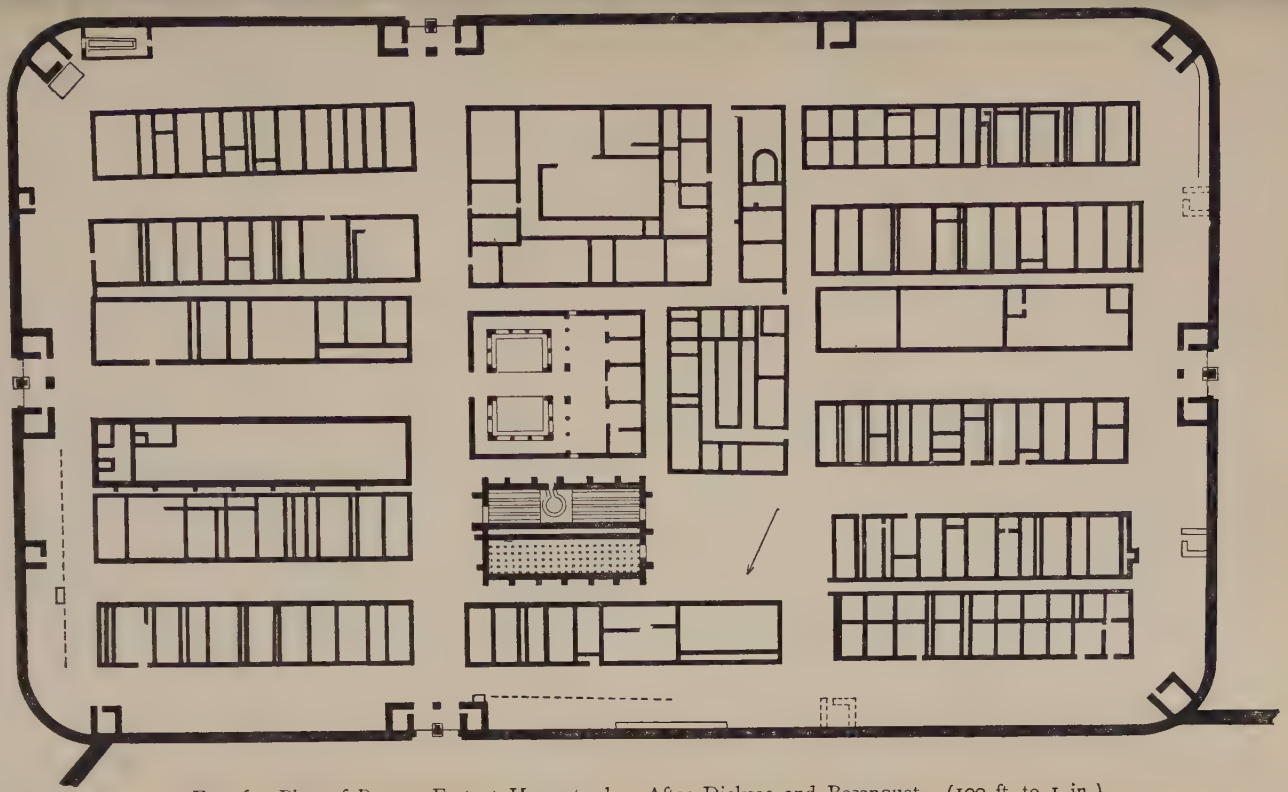


FIG. 6.—Plan of Roman Fort at Housesteads. After Dicksee and Bosanquet. (100 ft. to 1 in.)

Melandra; whereas in all the other excavated forts, with the solitary exception of Brough, it is much nearer the front, the extreme limit in this direction being reached at Housesteads, Great Chesters, and Lyne, while Brough represents the opposite extreme, its *via principalis* being nearer the back than the front.

The gates, it will be observed, have each two passages and two guard-chambers. The rampart is of earthwork, faced with a strong retaining-wall, while enclosing all is a ditch. The whole plan is slightly askew, a defect due to a faulty setting out of the main lines at the start, and seen in the plans of some other Roman forts.

Our next plan is that of Housesteads, Fig. 6. Its substantial identity with that of Gellygaer will be seen at a glance. There is the same rectangular form with rounded angles, and absence of external projections; the four double gates; and the basements of turrets within the face. The chief streets of the interior also correspond, and divide the buildings into similar groups. The direction of the long, narrow buildings of the *praetentura* and the *retentura* is different; instead of being placed cross-wise as at Gellygaer, they here run longitudinally—an unusual feature. The irregular spacing of the partition walls of these and some other blocks bears witness to reconstructions on other than the original lines, but as far as possible these later alterations are eliminated from our plan so as to avoid confusion. Housesteads, like other Wall forts, but unlike Gellygaer, was long occupied, so long, in fact, that through stress of war, decay and other causes, there was much rebuilding.

The plan of Birrens, Fig. 7, resembles that of Housesteads in its general proportions, but in the arrangement of its internal buildings it is more akin to Gellygaer; the defences, however, contrast with both. Instead of an earth-rampart faced with wall, it is wholly of earth; and instead of a single ditch, there are on the north and best preserved side no less than six. These sweep round the north-east corner, but on the east and south they are now obliterated by the encroachments of the neighbouring streams, and on the west by agriculture. From the analogy of other Scottish forts, it is probable, however, that on these sides the ditches were reduced in number, as the streams referred to formed a natural defence, while on the west there were formerly

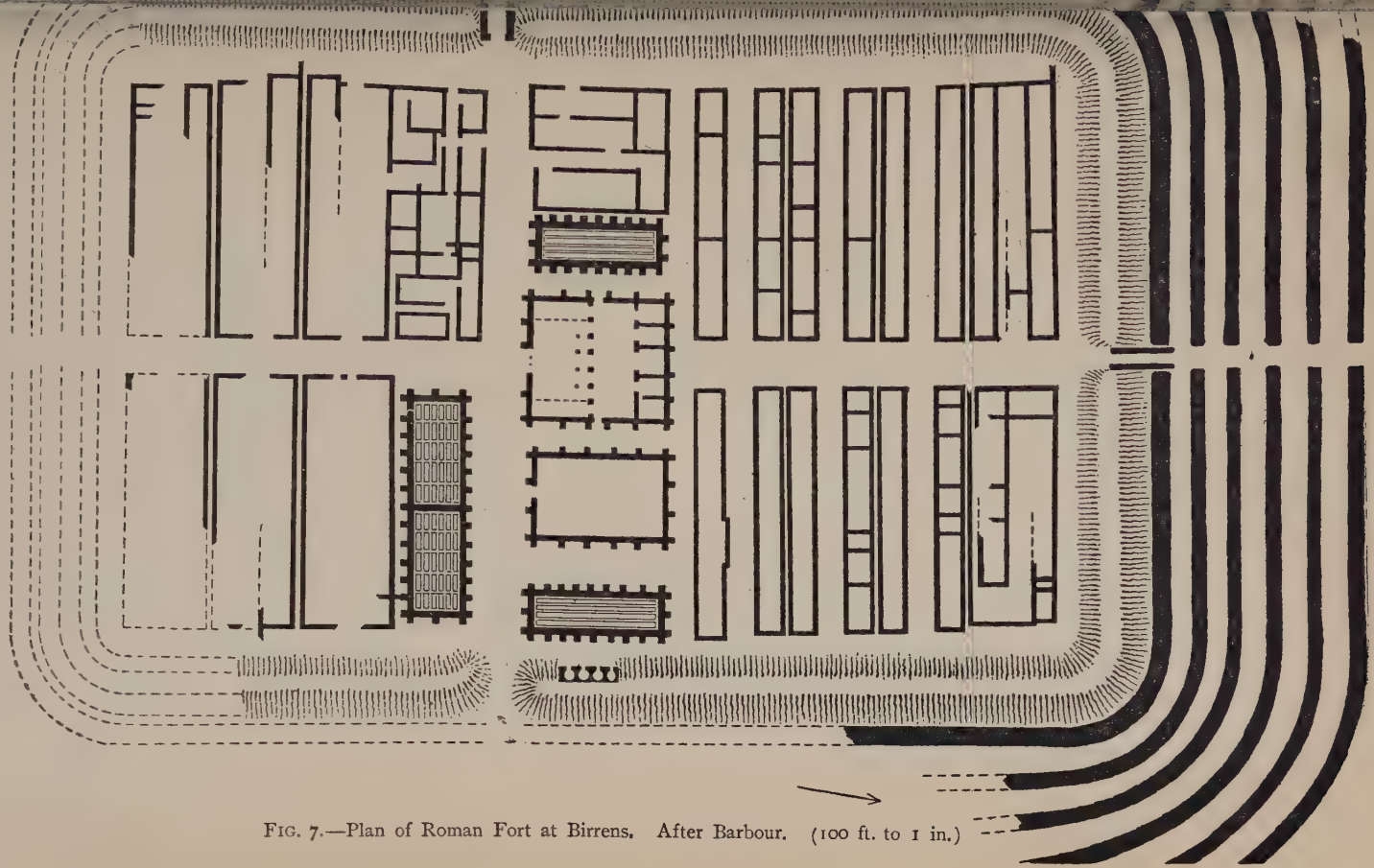


FIG. 7.—Plan of Roman Fort at Birrens. After Barbour. (100 ft. to 1 in.)

indications of a large fortified annexe similar to that at Camelon, which will be described below.

Many of the Scottish forts are remarkable for their massive earth-ramparts and intricate outer defences, expecially on the more vulnerable sides; also for their fortified annexes. That on the river Lyne, Fig. 8, is a comparatively simple example. Its situation resembles that of Birrens. It is on a plateau about 100 ft. above the river, which flows at the foot of its west and south declivities, while to the north and east are hollows which were formerly marshes. The fort itself is a short oblong with boldly rounded corners, and is close to the west brow, but is sufficiently set back from the south brow to leave space for a wing-like annexe, which is balanced by another on the north. The rampart is of earth, and external to it is a ditch separated by an interval or berm, both being continuous except at the four gates; but there are additional defences where the 'command' was weakest. Two supplementary ditches sweep round the north-east corner and diverge on the east side so as to leave an intervening wide terrace fortified by an earth-rampart along its exterior margin, while along the opposite edge of the outer ditch is a smaller bank, apparently to increase the height of the counterscarp. Both ditches and banks sweep round the south-east corner as far as the south annexe; the outer ditch is continued to the south-west corner of the fort. Each annexe is defended by a ditch. The internal buildings were arranged as at Gellygaer and Birrens; but while the principal buildings were of stone, those of the *practentura* and *retentura* were of timber.

The situation of Camelon is similar to the last. The plateau on which it stands overlooks to the north and east the confluence of two streams, while to the south and west the ground gently slopes away; and the main work is similarly set back from one of these brows—that facing the north—to leave space for an annexe. The fort is almost square and is (or rather was) enclosed by a massive earth-rampart, now almost levelled; but the ditches, of which there were two, an inner narrow, and an outer wide one, ran only along the two sides more distant from the brows, and were continued to the north brow so as to close in the annexe, which was further protected by a rampart. As neither the ditches nor this rampart seem to have been returned

along the edge of the brow, the steepness of the declivity was apparently considered a sufficient defence on the north and east.

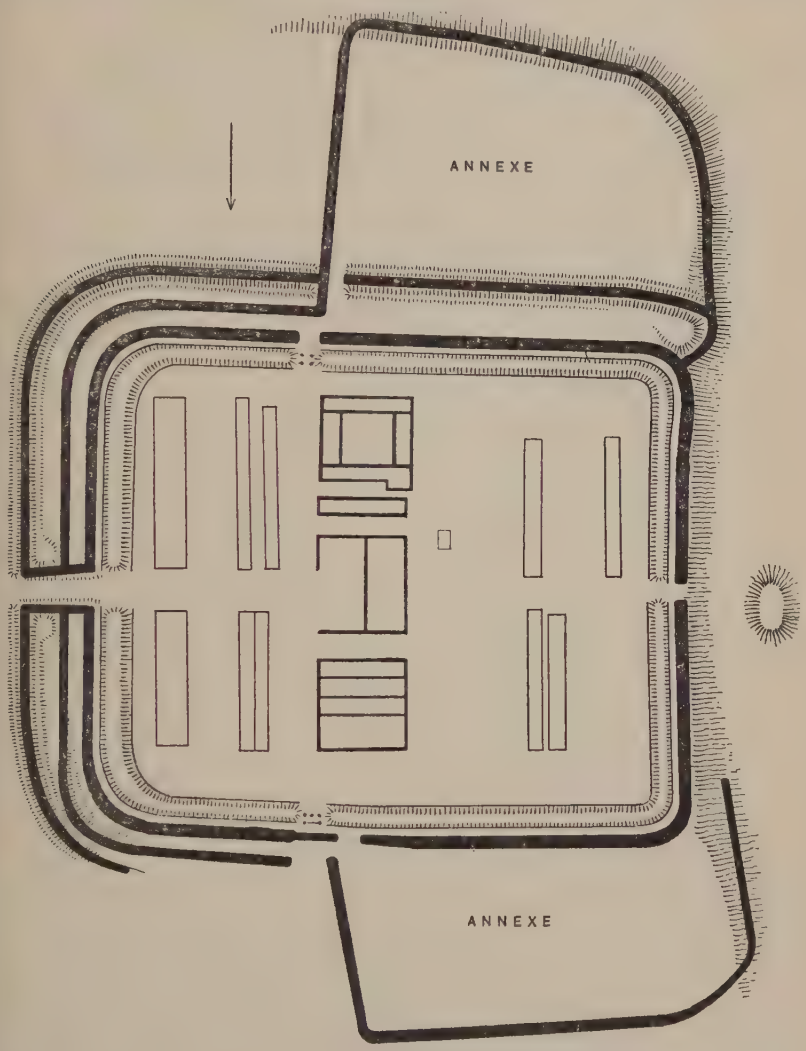


FIG. 8.—Plan of Roman Fort at Lyne. After Ross. (200 ft. to 1 in.)

The annexe was entered by a gate in the above rampart and by the north gate of the fort. At some later date a quadrangular space to the south, and of larger area than the fort itself,

was enclosed by an earth-rampart and ditches. The *via principalis* of the fort was continued through it, and made its exit by a gate on the south, and it was crossed by an east and west street which passed through a gate on the latter side. The buildings of the main work are remarkable for their arrangement, those of the *praetentura*, which faced the brow, being longitudinal, as at Housesteads, while those of the *retentura* were placed transversely as usual. Little is known of the contents of the southern annexe beyond that it contained two large buildings, one of which seems to have been the baths of the garrison.

In the defences of Ardoch we have an extreme example of intricacy. Its west side crests the precipitous banks of the Knaick Water, while to the south and south-east was formerly a stretch of marshy ground. To the north and north-east the ground rises, and in these directions the loss of 'command' is made good by the increased width and intricacy of the artificial defences. The defences on the south are well-nigh obliterated, as they are also to a lesser degree on the west by a modern road. The fort was enclosed by an earth-rampart and ditch, except where interrupted at the four gates. But in addition to these normal defences we have on the east side four additional ditches, which are reduced to three near the south-east corner, and after an irregular interval, an outer bank, which, beginning at the east entrance, sweeps round the north-east and ends at the north-west corner, enclosing in so doing the intricate defences of the north side, Fig. 9. Here we also have five ditches, but they are not all continuous with those of the east side. The innermost follows the rampart as before, but the second, instead of running parallel with it, diverges towards the middle, leaving a terrace-like strip or 'ravelin' of natural surface which widens towards the causeway of the north entrance. Then, at a little distance, leaving another strip which is protected by a small rampart or parapet along its outer edge, are three parallel ditches in close succession, like those of the east side of the fort ;[1] and finally, the external bank already referred to. The south defences are almost obliterated, but they show less intricacy and width ; while those of the west side seem to have been reduced to the rampart and its proper ditch, the river affording a natural defence on that side. The buildings within the fort were almost

[1] These were originally continuous across the entrance.

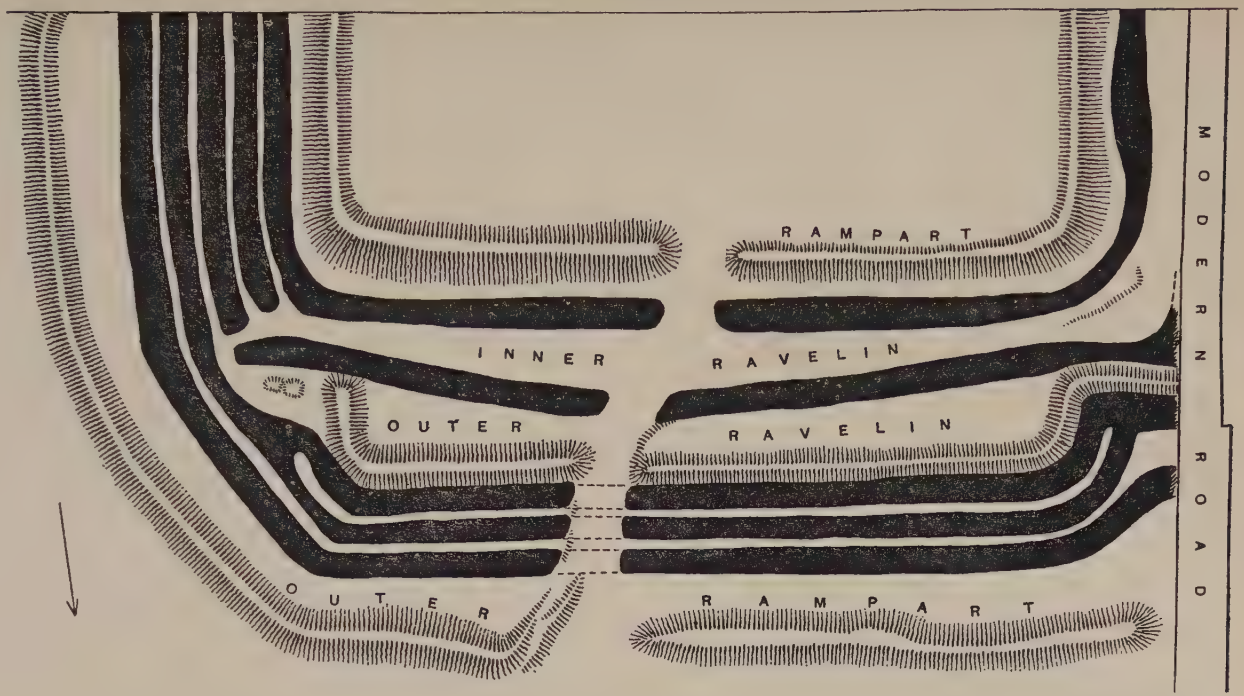


FIG. 9.—North end of Roman Fort at Ardoch, showing intricate defences. Ditches shown in solid black. After Cunningham. (120 ft. to 1 in.)

wholly of timber, and their remains are very slight and indefinite, but their forms and distribution appear to be normal. Attached to the north end of the fort are the faint remains of a large 'procestrium,' about four times the size of the interior of the main work, which was enclosed with a bank and ditch. This encroaches upon the larger of the two camps described in the last chapter, of which the fort was probably the successor.

The intricate defences of this fort have long puzzled antiquaries. It has been surmised that the Romans simply occupied and modified a British work, but the excavations of 1896–7 proved that they are wholly Roman. Dr. David Christison admits the difficulty of understanding the precise object of some of the details, and attributes them in part to subsequent alterations and additions; but so far from being a "hopeless maze," he sees in the whole a skilfully devised plan. The bewildering complexity of the north-east and north-west corners provided a flanking defence at these angles. The widened ends of the outer ravelin would enable a large number of men stationed there to cross fire with their friends on the extreme ends of the inner line of defence.

Castlecary and Rough Castle on the Antonine Wall, in spite of their disparity of size, have a strongly marked character of their own. Both are applied to the back of that barrier, which thus forms their north fronts, but modified in each case, being of masonry instead of turfwork in the one, and of turfwork of greater width than usual in the other. In both, the rampart of the remaining sides abuts at right angles against the Wall, but the southern corners are rounded, resembling, in these respects, Carrawburgh and the mile-castles on the Wall of Hadrian. The ramparts differ, however, that of Castlecary being of masonry with some evidence of a bank within, while that of Rough Castle is of turfwork like the Wall itself. Each fort has four entrances, the north one being through the Wall; and the military way behind the latter constitutes the *via principalis*. The outer defence of each is a double ditch, and each has an eastern annexe protected by an earth-rampart and single ditch. The range of principal buildings was of stone, and occupied an unusually large space. The buildings of the *praetentura* and *retentura* appear to have been of timber. Castlecary is remarkable for its form, being broader than long, and

still more remarkable are the defensive pits or *lilia* brought to light during the exploration. They were found just beyond the foot of the glacis of the ditch of the Antonine Wall between the traverse of the north gate and the brink of the valley on the west side of the fort. The pits are 7 ft. long, 3 ft. wide, and 2 ft. 6 ins. deep, and are arranged alternately in ten parallel rows, together forming a band about 200 ft. long and 60 ft. wide.

The Bar Hill fort differs from the last two, and from probably most of the other Antonine Wall forts, in being set back from the Wall. Like both, it has a double ditch on three sides, but on the fourth, that next the Wall, they coalesce into a single one of greater width than either. Its rampart of turfwork is pierced with four gates. Most, if not all the principal buildings were of stone, but those of the *praetentura* and *retentura* were of wood. There is no fortified annexe. An interesting feature of the exploration was the discovery of the ditches of a small and earlier fort on the site, with rounded corners and a single gate, and a rampart formed of the upcast from the ditches, of which there were two. The inner ditch closely invested the rampart, but the outer straggled away in a curious manner. On the side opposite the gate was an irregular quadrilateral annexe. This little fort had been long abandoned before the Antonine fort was constructed, and it is attributed to Agricola by Dr. Macdonald.[1]

The fort at Coelbren reproduces some of the features of the Scottish forts in its earthwork ramparts, double ditch, and traces of an outer glacis. Its exploration did not go far enough to throw light on its internal planning. The remains of one timber building were found, as also traces of gravel, stone-pitched, and clay floors ; and it is probable that many if not all of the buildings were of timber.

The excavations at Castleshaw have disclosed the remarkable feature of an inner smaller fortified enclosure, about 200 ft. long and 150 ft. wide, near its south-east side. Both inner and outer forts are of similar shape, and their ramparts are for the most part of piled sods. Within each angle of both ramparts is a patch of roughly laid stones, apparently the foundation of a turret or of a *ballistarium*. Three gates remain of the larger work, but no

[1] A similar early fort has been found on the site of the great fort at Newstead, also attributed to Agricola.

opening appears to have been found into the smaller work; but it is probable that the entrance, as well as the fourth gate of the former work, were on the south-east, as the ramparts here are nearly obliterated. Although the two works are of similar construction, it is hardly likely that they were raised together, and the evidence, so far, tends to show that the inner represents a curtailment of the outer to accommodate a smaller garrison. The gates and the internal buildings were of timber, as evidenced by post-holes and the absence of dressed stones.

We need not particularize upon the other forts enumerated on pp. 19–20—Chesters, Great Chesters, Birdoswald, High

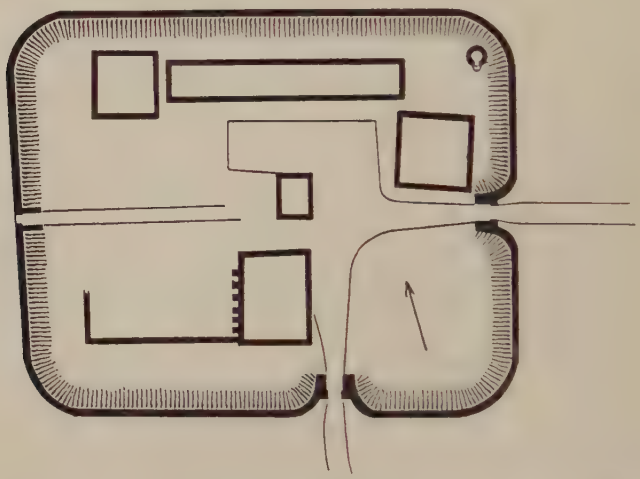


FIG. 10.—Plan of Roman Fort at Haltwhistle Burn. After Simpson. (80 ft. to 1 in.)

Rochester, South Shields, Hardknott, Melandra, Brough, Newstead, and Ribchester—beyond remarking that they were all stone forts, like Housesteads and Gellygaer, and of symmetrical form and arrangement; with four gates in their normal positions (those of Chesters and Birdoswald, however, being supplemented with two small gates); with towers set back from the rampart faces; and with one or two ditches of simple type. Wilderspool alone is exceptional in its trapeziform plan and curious internal structures, and it looks like the annexe of a fort rather than a fort itself.

The small fort on the Stanegate west of Birdoswald, excavated by Messrs. J. P. Gibson and F. G. Simpson in 1907–8, differed considerably from the foregoing, Fig. 10. It was 212 ft. long, and had a mean width of 185 ft., the east end being wider than the west. The rampart was of earth faced with a wall 3 ft. thick. The west end was set back from the brow of the Haltwhistle Burn, and on the remaining sides was a ditch, which, however, was nowhere parallel with the rampart, the space between the two varying from 18 ft. to 60 ft. On the south and west were two gates of simple construction, each of a single passage of 9 ft. 4 ins. between the jambs, and set back about 8 ft. between two incurvings of the rampart wall. At the west end was a postern, 4 ft. 6 ins. wide, and this and the east gate had been walled up. The buildings within were remarkable for their simplicity and arrangement, having little in common with those of the forts described above. On the north side was a long building, 98 ft. 9 ins. by 17 ft. 6 ins., apparently a barrack block. Besides this, there were four small rectangular structures, and a larger one, apparently a yard ; and within the north-east corner, a circular oven, 3 ft. 2 ins. in diameter. In the opinion of the excavators, this fortlet was of early construction and of short occupation, and the finds, especially the pottery, confirm this.

Of the bastioned forts, Cardiff furnishes a good example. The early medieval builders of the castle utilized the Roman lines, throwing a great bank over about two-thirds of their circuit, and rebuilding the residue to form the structure known as the ' Ten-foot Wall.' The discovery of buried Roman masonry was brought about some years ago by the removal of the outer portion of this bank, thus disclosing a corresponding stretch of Roman walling of great thickness and strength, with polygonal bastions at regular distances and the remains of a gate on the north side. From these and less direct indications, it is possible to re-construct the Roman plan, Fig. 11, the actual remains being shown in solid black, and it will be noticed that three of its sides slightly bowed outwards. The gate is of a single span, and presumably there was a corresponding one on the south side, now represented by the medieval entrance to the castle. The central bastion of the east side is externally similar to the rest, but it is hollow instead of solid, and there is reason to believe that it contained a postern. On the west side all the bastions have

disappeared; but the symmetrical planning of the existing remains of the fort renders it probable that this side resembled the eastern.

Richborough in Kent [1] (the *Rutupiae* of the 'Saxon Shore'), Fig. 11, is perhaps the best known example of this type of fort, and it was of great importance, as it guarded the chief port of entry into Roman Britain. Its walls are also of great strength, and its remaining gate, on the west side, is of a single span, but not centrally placed. Whether there was a corresponding gate in the opposite or sea-wall, it is impossible to say, as few traces of that wall remain. The bastions appear to have corresponded in number and arrangement with those at Cardiff, but instead of being polygonal, the corner ones are circular, and the lateral, square. The middle bastion of the north side covers a postern; but here again it is impossible to say whether it was balanced by one on the south side. The peculiar feature of this fort is an enormous platform of concrete with a cruciform superstructure, the use of which has not been satisfactorily explained.

Lympne (*Portus Lemanis*),[2] another Kentish fort of the 'Saxon Shore,' has walls still more massive (Fig. 12). It is difficult to make out its exact shape, as these walls have shifted and tumbled about in an extraordinary manner. The south or sea-wall has entirely disappeared; but assuming that it was straight, the fort appears to have been pentagonal, with the two longer sides parallel. The chief entrance was towards the south end of the east side; while at the north salient was a postern, and apparently two others on the west side. The bastions have semicircular fronts and stilted sides.

Burgh Castle [3] in Suffolk (the *Gariannonum* of the 'Saxon Shore'), Fig. 11, also had a sea-wall at the foot of the declivity, of which no remains are visible, but excavations in 1850 revealed the piles on which it stood. The plan, thus completed, is oblong, with the sea-wall longer than the opposite or east wall. The remaining principal entrance is in the middle of the latter wall; and there are indications of posterns in the middle of the north

[1] Roach Smith, *Richborough, Reculver, and Lymne.* Fox, *Archaeological Journal*, 1896.

[2] Roach Smith, *Excavations on the Site of the Roman Castrum at Lymne*, 1850.

[3] Personal Observation, and *Remarks on the Gariannonum of the Romans*, J. Ives.

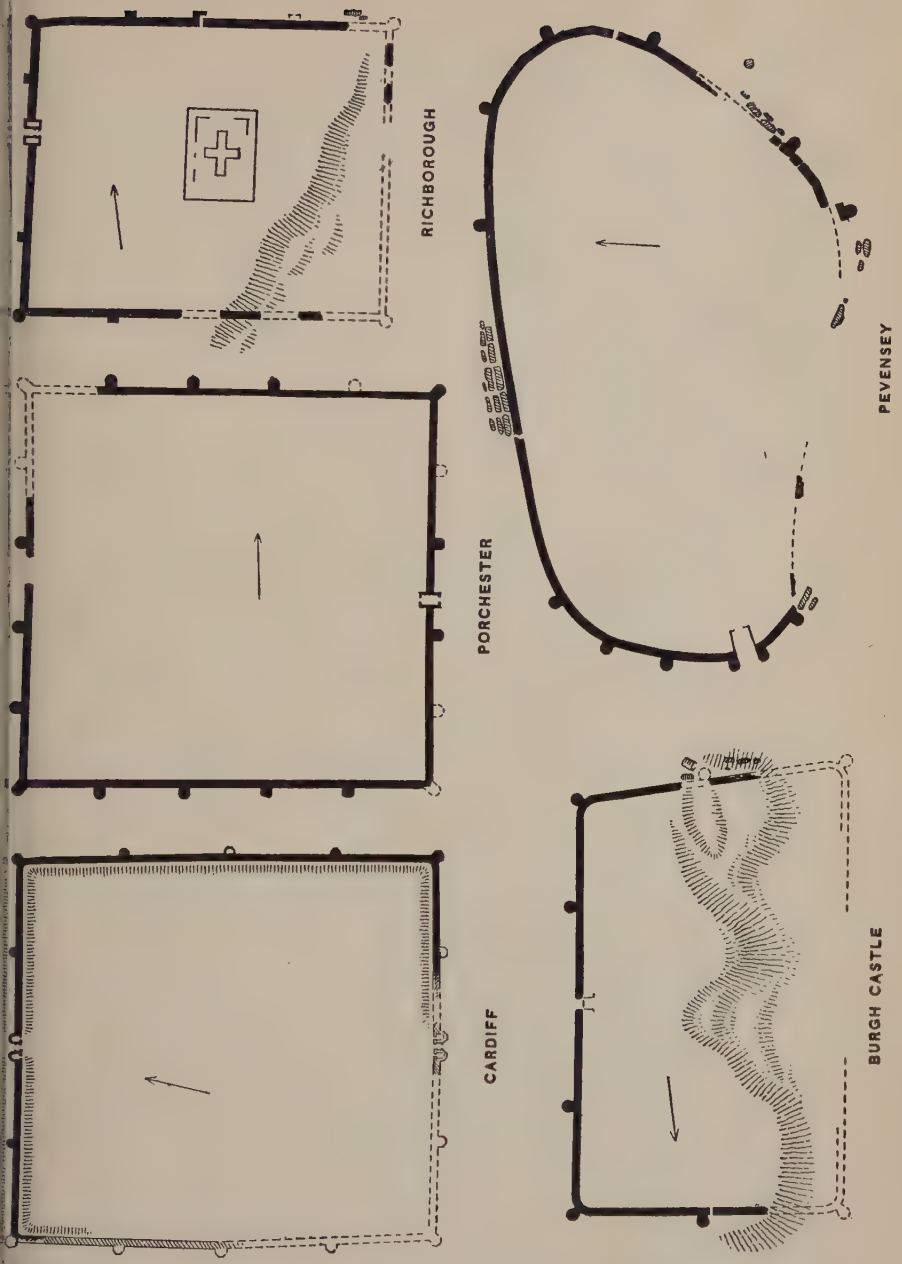


FIG. 11.—Plans of Bastioned Roman Forts. (300 ft. to 1 in.)

and south sides. The corners, unlike those of the preceding bastioned examples, are rounded off; and the bastions, which are symmetrically arranged, have bold semicircular fronts with contracted necks, that is, are somewhat pear-shaped.

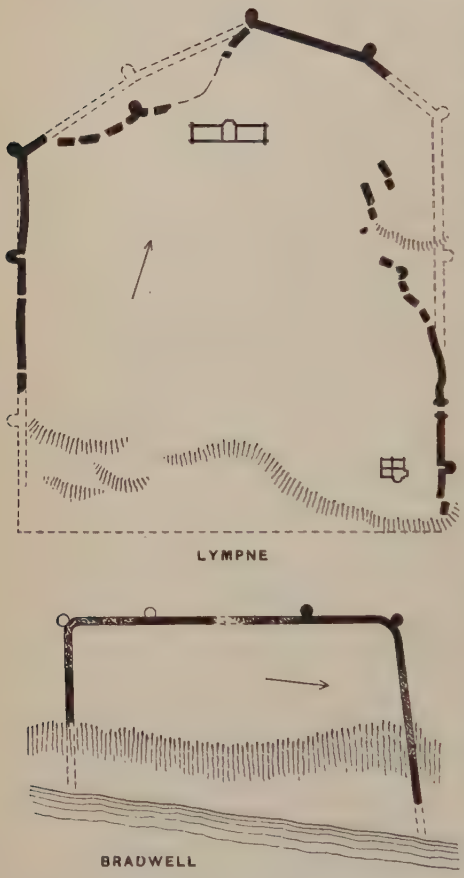


FIG. 12.—Plans of Bastioned Roman Forts. (300 ft. to 1 in.)

At Bradwell-juxta-Mare, Essex (*Orthona*),[1] are some slight remains of another of these coast-forts, Fig. 12, which appears to have been of about the size of Richborough, but was not quite rectangular. The sea-wall, as in the last two examples, has gone. As at Burgh, the corners are rounded off, and there is the opening of a large entrance in the side most distant from the sea. The foundations of two of the bastions, which resembled those of Burgh Castle, remain.

Porchester Castle, near Portsmouth, Fig. 11,—like Cardiff Castle, a Roman fort modified by the medieval castle-builder—is also a coast-fort, but beyond the limits of the 'Saxon Shore.' It is nearly square, with boldly projecting bastions like those of Lympne, which appear to have been symmetrically arranged; and on the side next the sea is a central gate of a single span. Whether this was balanced by another on the opposite side is uncertain, and it is also uncertain whether the remaining sides had posterns.

[1] *Coll. Antiq.* vii, 155. *Arch. Jour.* xxii, 64; xxiii, 60.

FIG. 13. SOUTH-EAST CORNER BASTION, BURGH CASTLE

Pevensey Castle[1] in Sussex (the *Anderida* of the 'Saxon Shore'), Fig. 11, is another Roman fort which has been utilized as a medieval castle. Its plan presents a striking deviation from the typical Roman form, being somewhat oval in shape in conformity with the configuration of the ground. Its bastions resemble those of Porchester, and its imposing gate—probably the only one—is of a single span and deeply set back between two of the bastions.

At Bittern,[2] on a promontory in the estuary of the Irthin, near Southampton, are the remains of a fort as strikingly abnormal as Pevensey. It is triangular, a shape obviously adapted to the apex of the promontory. Little is to be seen of it now; but its strong walls, and the former remains of bastions, warrant its inclusion in the present class.

The remains of similar bastions to those of Porchester, but of less projection, have been found attached to the Roman walls of London.[3] The sculptured stones and fragments of architectural details built into them indicate their late rather than early construction.

The reader can hardly have failed to observe that these forts contrast with those of our previous series in other respects than in the presence of bastions. Their walls are remarkable for their thickness and strong construction. Their gates seem never to have exceeded two in number, any additional entrances being small posterns; whereas, in the other series, they were four and exceptionally six. They differed too in their contracted width, consisting, as far as we know, of a single opening. These forts also show a decided tendency to disregard the traditional symmetrical rectangular form. It will also have been noticed that the examples given were estuary or coast defences; this, however, must not be pushed too far, as some inland forts had bastions—the great multangular tower at York was a Roman corner bastion, and the Roman fort at Ancaster has traces of circular bastions capping the corners.

In the first of the two tables next given, the forts are of our first type, and they are selected because their plans are sufficiently perfect to give the particulars required. The length and width

[1] *Munimenta Antiqua*, E. King, ii, p. 38.
[2] Englefield, *Walk through Southampton*, 2nd ed., 81. *Proc. Soc. Ant.* 2, xix, 56.
[3] *On a Bastion of London Wall*, J. Edward Price.

are taken from the outer faces of the ramparts. The position of the *via principalis* is important, as it carries with it the positions of the lateral gates: the figures express the ratio of its distance from the front of the fort to the total length reckoned as 100. The fact that no remains of turrets have been found in the 'earth' forts does not disprove the former existence of these structures, as they may have been of timber, and so have long since perished. The second table gives a list and particulars of the better preserved bastioned forts.

It will be observed that the areas pass by easy transitions from the 1.2 acres at Rough Castle to the 4.8 at Lyne; while Camelon and Newstead stand apart, the latter after a longer interval than the former. To ascertain how far they may be representative for this country, the writer calculated the areas of nearly seventy forts, including those of the two tables, but excluding the legionary fortresses and the fortified towns. Unfortunately, many of the measurements given are approximate only, and generally it is not stated whether they are within the ramparts or over them, but probably these uncertainties do not materially affect the following results :—

Forts.		Areas.
5 per centum	. . . .	from 1.3 to 2 acres
79 ,, ,,	. . . .	,, 2.3 ,, 5.8 ,,
6 ,, ,,	. . . .	,, 6.0 ,, 8.0 ,,
10 ,, ,,	. . . .	,, 9.0 ,, 14.0 ,,

Of the second and largest group the preponderating sizes range from 3.3 to 4.5 acres. Of the last it is quite possible that two or three of the largest, ranging from 13 to 14 acres, may be small fortified towns rather than forts, leaving a residue of the same size as Newstead, or slightly smaller or larger. Of the few forts of intermediate size three are of the bastioned type. The inference of it all seems to be that the forts of the second group were designed to hold single cohorts of infantry, normal or extended, or single *alae* of horsemen; and that those of the last group were designed for double cohorts or *alae*; while the smallest forts were held by small detachments.

TABLE I

Fort.	Dimensions (English Feet).		Internal Area.	Position of Via Principalis.	Rampart.	Number of Gates.	Turrets.	Number of Ditches.	Retentura compared with Praetentura.
'Stone' Forts:	Length	Width	Acres.						
Gellygaer, Glamorgan	402	385	2.6	46.0	Masonry	4	Angles and sides	One	Smaller
Brough, Derbyshire	348	287	1.6	55.7	,,	4	Angles only	,,	,,
Melandra, ,,	398	368	2.2	48.9	,,	4	,,	,,	,,
Hardknott, Cumberland	375	375	2.4	42.6	,,	4	,,	,,?	,,
Housesteads, Northumberland	609	373	4.4	31.1	,,	4	Angles and sides	...	Equal
Chesters, ,,	573	428	4.5	41.0	,,	6	,,	One	Smaller
Great Chesters, ,,	420	347	2.6	31.6	,,	4	Angles only	,,	Larger
Carrawburgh, ,,	450*	360*	4.0*	33.3*	,,	4	?	One, two part way	,, ?
Birdoswald, Cumberland	...	414	4.0	...	,,	6	Angles and sides	One	,,
High Rochester, Northumberland	478	450	3.8	41.0	,,	4	Angles only?	Three	Slightly smaller
Newstead, Roxburghshire	825	720	11.0	35.2	,,	4?	?	Several	Larger
Castlecary, Stirlingshire	365	471	3.6	33.7	,,	4	Angles only	Two	,,
'Earth' Forts:									
Coelbren, Glamorgan	490	475	3.5	30.9	Earthwork	4	None found	Two	Smaller?
Castleshaw, Lancashire	399	342	...	...	,,	4?	Foundations?	One	...
Birrens, Dumfriesshire	600	381	3.9	42.5	,,	4	None found	Several	About equal
Camelon, Stirlingshire	602	562	5.8	42.0	,,	4	,,	,,	Slightly smaller
Lyne, Peeblesshire	580	488	4.8	34.4	,,	4	,,	,,	Larger
Ardoch, Perthshire	550	490	4.0	39.0	,,	4	,,	,,	,,
Rough Castle, Stirlingshire	272	272	1.2	38.4	,,	4	,,	Two	Smaller
Bar Hill, Dumbartonshire	386	359	...	40.5	Turfwork	4	,,	Two, one part way	,,

TABLE II

	Dimensions (English Feet).	Internal Area (Acres).	Form.	Bastions.
Cardiff Castle . .	635×603	7·7	Rectangular	Polygonal
Richborough Castle.	530×435	4·8	,,	Rectangular; circular at corners
Burgh Castle . .	670×420?	5·5?	Quadrilateral	Pear-shaped
Bradwell-juxta-Mare	510× ?	?	,,	Circular or pear-shaped
Porchester Castle .	630×612	7·5	Rectangular	Parallel sides with semi-circular fronts
Lympne . . .	790? ×665	9·2	Irregular pentagon	,, ,,
Pevensey Castle .	986×535?	8·3	Irregular oval	,, ,,

FORTIFIED TOWNS

Under the settled conditions which followed the period of the conquest, there were three legionary stations—Caerleon (*Isca Silurum*), the headquarters of the Second 'Augusta'; Chester (*Deva*), that of the Twentieth 'Valeria Victrix'; and York (*Eburacum*), that of the Sixth 'Victrix'—all conveniently situated as bases for the garrisons of Wales and of the northern frontier. These were fortresses—forts on a large scale, and planned on the same lines, but with larger and more varied accommodation. There were also a number of towns inhabited wholly or mostly by civilians, especially in the south and south-east, and these were also fortified and, so far as we know, were planned on the same lines, some precisely so, others loosely so. To classify the towns as 'military' and 'civil' is convenient, but it is not exact. Some began as military stations, and ended as communities of civilians engaged in the arts of peace. York, long the official capital, had a large civilian population in its fortified suburbs; and it can hardly be questioned that the 'civil' towns included at one time or another—perhaps always, as their fortifications imply—a military element in the shape of a small garrison or guard.

With regard to their external forms, these towns were of two types. The three legionary fortresses, and Colchester, Lincoln, Gloucester, Leicester, Aldborough, Caerwent, Irchester, and some others, resembled the forts, that is, they were oblong. Silchester, Wroxeter, St. Albans, Bath, Chichester, Kenchester, and Corbridge, on the other hand, were irregularly polygonal or

bunded. Several others, as Cirencester, London and Win-nester, may be regarded as intermediate, being oblong, but regularly so; but the last two may owe their irregularities to xtensions in Roman times. Why some 'civil' towns should ave been on the military model, may in part be explained by he fact that several—as Colchester and Lincoln—were originally he headquarters of legions; and it is probable that others of he same form had a like origin, although there is as yet no vidence for this. In the earlier stages of the conquest the oman armies must have been stationed for short periods in ther places in the south and south-east than Colchester. Each dvance of the conquest carried the scene of military operations rther to the north and west, and it is reasonable to think that he legions would be shifted to new quarters, leaving the main-enance of order in the vacated regions to scattered garrisons. It as only when the conquest was complete that Caerleon, Chester nd York became the settled military centres, and remained o to the close of the Roman era. Yet it scarcely accords with acts to make the quadrilateral form a test of military origin. he exploration of Caerwent yielded no evidence of such an rigin for that town: on the contrary, all the remains that ave been discovered within the walls are those of houses, hops and public buildings appropriate to a 'civil' town.

Caerwent (*Venta Silurum*) was a small town with a single nain street threading it lengthwise and passing through the ast and west gates, and a number of minor streets or anes. Two of these were parallel to the main street, and the est cut them at right angles, thus dividing the area into ectangular *insulae*. There were two minor gates, the one on he north and the other on the south, but the one was not opposite he other. Most of the other quadrilateral Roman towns still emain towns, and their present plans are reminiscent of Roman lanning. They differ, as a rule, from Caerwent in having two rincipal streets crossing one another at right angles, as in the orts. This is especially noticeable at Gloucester, where Northgate nd Southgate streets represent the chief Roman longitudinal horoughfare, and Westgate and Eastgate streets the chief ransverse thoroughfare. This cruciform arrangement is also ell marked at Chester and Lincoln. The relics of the minor streets are well seen on the plans of Winchester and Colchester,

arranged as at Caerwent, and tending to divide the blocks of buildings into rectangular *insulae*.

The unsymmetrical outlines of the towns of our second type might seem to indicate that these towns were not 'made,' but 'grew,' like most modern towns, and that their fortifications were a late episode in their development. Silchester alone of them has been systematically explored. This ancient town occupied the flat summit of a gentle eminence, and is now covered with fields, with the exception of the parish church and a farmhouse. Its form is roughly octagonal (Fig. 14), but really nine-sided, each side being straight. The fortifications are of earthwork faced with a strong wall, external to which are the remains of two ditches. This line is pierced with four principal gates and several posterns. The streets cross one another at right angles, and the whole plan with its central forum is thoroughly Roman, in spite of the external form.

The exploration, however, has yielded some evidence that when the streets were set-out the site was already occupied. The *insulae* were not all of the same shape and size, and some of the houses, instead of being built up to the street sides, were set back from them and were canted at various angles. This has been held to indicate that these houses were built before the streets were planned; but the argument loses some force when it is considered that under any circumstances the builders of these houses, not being governed by the streets, were free to choose what aspects suited them best. Still a careful study of the plan shows that it is probable the site was partially built on before the streets were finally set out. The forum and the street facing its entrance are slightly canted to the E.S.E., and it will be noted that the baths, the temples, and some other buildings are similarly inclined. It would seem that the public buildings and this street were constructed before the general street-system was planned, and that for some reason their exact orientation was disregarded.

So far as can be judged from their remains, the other unsymmetrical Roman towns appear to have resembled Silchester, and like it to have had four principal gates. Roman Chichester was similarly polygonal, and the present streets are reminiscent of a similar rectangular arrangement. Bath was an irregular pentagon.[1]

[1] Scarth, *Aquae Solis*.

nchester was an elongated hexagon.[1] The excavations at roxeter showed the streets around the basilica, and the baths [2]

FIG. 14.—Plan of Silchester (*Calleva Atrebatum*). (600 ft. to 1 in.)
A, B, C, D. the principal gates; E, the forum; F, public baths; G, *hospitium*; H, H, H, H, temples; I, church; K. baths; L, amphitheatre.

ere arranged as at Silchester; but the rampart and ditch differ their irregular curvilinear course. This, in less degree, is also

[1] *Arch. Journal*, xxxiv, p. 354. *Vict. History*, Herefordshire, i, 175.
[2] Wright, *Uriconium*.

noticeable at St. Albans, and the streets there are known to have been arranged in two series as at Silchester.

There is both historical and archaeological evidence that many Roman towns in Britain had a British origin. In the vicinity of several may be detected the intrenchments of the British *oppida* they succeeded. At Silchester most of the British circuit is known, and it enclosed an area nearly three times larger than the Roman. At Colchester it was on a much larger scale. At St. Albans there are traces of a large *oppidum*, but this, instead of including the Roman town, lies on the opposite side of the river. At Leicester a faint line of entrenchment south of the city may be part of an enclosing work of a similar nature. From historical and numismatic data we know that the first three *oppida* were respectively the 'caputs' of the British Atrebates, Trinobantes, and Catuvelauni. The British *oppidum* was a fortified tribal camp and centre, and it probably contained a small settled population whose huts were more or less scattered, but tended to cluster around the house of the tribal chief; but it was not a town as we understand the term.

One of the earliest steps of the Roman conquerors was the establishment of a settled government, and in doing this they appear, as a rule, to have adopted the British tribal territories as their units of administration, and with the territories, the tribal capitals. Thus far they kept up a link with the past, and to this was probably due, in great measure, the rapid acquiescence of the natives in the new conditions. How far they modified the old machinery is uncertain; but undoubtedly they gave it a Roman form. With the adoption of the capitals would follow the remodelling of them on Roman lines, and the erection of offices for carrying on the new administration. Silchester affords a good example of the result. Although a certain amount of trade was carried on within it, it was not strictly a commercial centre. It was not full of shops like Pompeii. The houses were of a goodly sort, with intervening yards and gardens. Its population probably never reached 3000, and its central forum and administrative buildings were altogether on too large a scale for the municipal needs of so small a town. It appeals to one as essentially a residential town, and perhaps many of the residents were the officials of the *civitas* or canton. The roads radiating

n it afforded easy and rapid communications with all parts he territory it controlled.[1]

The towns were not all of the same constitution and rank. Albans was a *municipium*, and Colchester, Lincoln, Gloucester, York were *coloniae*; and possibly some other towns shared the high privileges of these. But however important these ns were at first, they were gradually overshadowed by others ich had not these privileges, especially by London, then, as v, the commercial metropolis, until at length the decree of acalla, in extending the privilege of Roman citizenship to all free inhabitants of the Empire, constituted every provincial n a *municipium* in fact, if not in name. Whatever advantage old *municipia* and *coloniae* now retained, would probably be e of rank and honour only, the distinction between them and others being of a similar nature to that between our 'city' l 'borough.'

To return to the fortifications of the towns—it can scarcely questioned that those of the quadrilateral towns, like those the forts, were raised, or at least provided for, at the outset; d this is presumptive evidence for the contemporaneity of se of the unsymmetrical towns. It is true that the Icenian olt found Camelodunum unfortified, but the statement of citus implies that this was exceptional, the result of neglect. chester offers something towards a solution. Its circumvalla- n approximates to the configuration of the site. The road m the west bends to due east upon entering the town through e west gate, showing that this gate marks the limit of the wn on that side, when the streets were set out. These, of course, not amount to conclusive proof, but they favour the view t the circumvallation and the planning of the interior were ultaneous. By adopting the polygonal form, the engineers re able to enclose a maximum of space, and to obtain a maximum 'command' for their rampart. Had they adopted the rect- gular form, the enclosed space would have been smaller, unless portion of the slope of the hill had been included; but it would ve left portions of the plateau unenclosed. The irregular rvilinear form at Wroxeter has not a Roman look, and in this

[1] A monument was found at Caerwent in 1902, with an inscription to the ct that its erection was decreed by the *ordo* or senate of the *civitas* of the ures, of which Venta Silurum was the chief town or capital.

case the Romans may have simply utilized the older lines of a British *oppidum* which happened to be of suitable size for their purpose.

It thus appears that the towns were fortified early, and not late ; but there is good evidence that long after their foundation, their defences were modified and strengthened. The excavations at Caerwent have shown that the rampart was originally of earthwork only, and was afterwards faced with a massive wall, and it is almost equally certain that this was also the case at Silchester. That the existing Roman wall at Chester was also a subsequent work is proved by the large number of Roman tombstones and other worked stones used in its construction ; and these show that it could not have been erected before the middle of the second century. Carved and sepulchral stones were similarly used in the bastions of the Roman walls of London. The great thickness and other peculiarities of the town walls also indicate their late, rather than early, date, as will be more fully discussed in the next chapter. This strengthening of the fortifications of the towns is generally assigned to the close of the third and early part of the following century. The motive could hardly have been the fear of foreign invasion. It must have been a growing sense of internal insecurity, such as the lawlessness and rival factions of the era of pretenders to the imperial purple between the death of Severus and the strong rule of Diocletian would give rise to.

CHAPTER III

FORTS AND FORTIFIED TOWNS

THEIR FORTIFICATIONS

RAMPARTS AND DITCHES

THE earliest fortifications were probably mere banks of loose stones gathered from the surface. But in all ages since man learned to dig, the ditch with its correlated bank of upcast has been recognized as the most effective defensive line with the least expenditure of labour, as the ditch itself constitutes an obstacle, and its depth accentuates the relief of the slope which confronts the assailant. But the slope of a bank of earth is necessarily low, and to offer further impediment ditch and slope may bristle with stakes and other obstacles. Sooner or later the advantages of a steeper slope would be recognized. Various methods of attaining this would suggest themselves, as a facing-wall of stone or turves, a facing-row of posts driven into the ground, or the introduction of bonding courses of logs or brushwood in the bank itself. Gradually it would be realized that a rampart need not consist of the upcast from a ditch at all, but may be wholly constructed of other material. In the Antonine Wall, for instance, the soil from the ditch was disposed along its front edge to form a glacis-like bank or spread, while the rampart was built of turves. And in some of the bastioned forts the ditch apparently was dispensed with, the massive stone wall alone separating assailant from defender.

Whether the above represents exactly the successive developments in the art of fortification or no, the whole gamut of transitions had already been passed through before the Romans set foot in Britain, so that an attempt to make rampart-construction a test of relative age in Britain seems likely to be futile; all that

can be said with reasonable certainty is that the earth-ramparts were typologically earlier than those of built stone. *We* have boats of wood and iron, but because the latter are of modern introduction we do argue that every wooden boat is necessarily older than every iron boat, for these boats are still built, and this shows that wood construction has still advantages over that of iron under certain conditions.

We may dismiss, therefore, any idea that the engineers of the Scottish 'earth' forts—Ardoch, for instance—constructed their ramparts of earth because they knew no better ; on the contrary, the arrangement and intricacy of these great works prove them to have been masters of their art. The clue undoubtedly lies in the multiplicity of their ditches. For reasons not clear to us, there must have been a local need for this multiplicity : perhaps the northern tribes were bolder and more aggressive than the southern. But granting these ditches, the immense volume of their upcast had to be disposed of somehow, and how better and more economically than by utilizing it for a rampart, strong in its hugeness ? The single ditch of many a southern fort could only have provided material for a small bank, hence the desirability that its effectiveness should be augmented by steepness of face and the disposal of the earth to the best advantage. Both were attained at Gellygaer by a retaining-wall, which not only provided a vertical face and allowed of the upcast which otherwise would have been required for an outer slope being utilized to raise the bank behind, but supplied in addition more soil for this purpose from its own foundation trench. Ramparts of this type seem to have been frequent, and there is reason to think—as will be pointed out presently—that in some cases the earth backings have been removed or spread out. The question of the contemporaneity of wall and bank in these ramparts is an interesting one. At Gellygaer the wall can hardly be otherwise than part of the original design ; but at Caerwent it was built long after the bank. Probably in every case the bank served as a rampart, if only for a short interval, as the first consideration would be to provide a defensive line as speedily as possible, and this, of course, would at once be supplied by the upcast of the ditch. Caerwent suggests that many of our 'stone' forts may have been originally designed as 'earth' forts. We have already remarked the *apparent* absence of

outer ditch and inner bank from some of the bastioned forts, but whether they really lacked them can only be disclosed by more thorough exploration. Cardiff, however, has a bank, and although of comparatively small dimensions it is too large to be accounted for by the upcast of the foundation-trench of the wall, and thus suggests a ditch ; but it may be in part the legacy of a fort of earlier type on the site. So far as appearances go, it would seem that if the more developed bastioned forts had ditches, they were only small ones ; and may we not conclude from this, that as time went on, more and more reliance was placed in the wall, which consequently became thicker, loftier, and more strongly constructed, besides increasing in efficiency by the addition of bastions ?

We shall now dissect a few examples of Roman ramparts and ditches, beginning with those of Gellygaer,[1] as they furnish an excellent insight into the methods of the Roman engineer. The ditch had the usual angulated or V-section, approximately 19 ft. wide and 7 ft. deep. The rampart was set back from its inner lip about 5 ft., and its average width was a trifle under 20 ft. In addition to the facing-wall there were the remains of a thinner wall at the back of the earthwork to support the foot of its slope, and both were built of the local Pennant-grit, and rested upon foundations of rough pieces of the same, laid horizontally in trenches from 1 ft. 6 ins. to 2 ft. in depth. The front wall varied from 3 ft. to 4 ft. 3 ins. in thickness, and was more carefully constructed than the back wall ; and it also remained to a greater height, which, however, rarely exceeded 3 ft. The facing-stones of both were in regular courses, but those of the front wall were larger, and were here and there slightly dressed by hammer, chisel or punch. The inner sides of these walls were extremely rough, showing that they had been built *against* the earthwork, and this and some other circumstances afforded an insight into the procedure of the builders.

First the ditch was cut, and its soil was thrown up to form a bank, leaving four openings for the gates. Then, after a longer or shorter interval, this bank was cut back to an upright face, and the foundation-trench for the front wall was dug, the soil from both operations going to augment the bank. Then followed the masons with their wall, which was returned 5 or 6 ft. at the

[1] *Roman Fort of Gellygaer*, p. 35.

corners of the entrances. Meanwhile, but certainly after the wall was carried up to some height, the bank was removed at the spots to be occupied by the guard-rooms of the gates and the turrets, the soil from these going to still further raise the remaining portions of the earthwork. This may seem a roundabout process, but it was clearly proved by the fact that the outer wall had been built against earth *at these places* as elsewhere. Then followed the stretches of inner retaining-wall, the ends of which abutted against the turret basements and slightly overlapped the guard-rooms, *these* ends being finished off as steps by which access was gained to the rampart-walk. This walk would be on the summit of the bank, for the wall was too narrow to have provided one. The wall would be carried up sufficiently high to form a parapet, and the back of the bank would slope down to the slighter wall behind, the whole having the section indicated in Fig. 15. The earthwork was about 14 ft. wide. Assuming that all the upcast from the ditch and the foundation-trenches of the front wall and other structures described above, besides that from the sites of the guard-rooms and turrets, contributed to it, the height of this earthwork would be about 11 ft. Assuming this height, that of the wall to the top of the merlons could not have been less than 16 ft.

The wall at Housesteads [1] was somewhat thicker than that at Gellygaer, but was faced on both sides. Remains of a bank behind it were found in 1898, as also remains of an inner revetment, showing that the total thickness of the rampart was from 24 to 26 ft. The Rev. J. Hodgson observed it as "a terrace, made of earth and clay, which ran from turret to turret along the inside of the wall to the height of 5 ft." Possibly this earthwork was never high enough to have provided a rampart walk; but the fact that late Roman buildings were found erected *against* the inside of the wall and on the level of the interior of the fort, may indicate that at their period the bank was not considered to be of use, and so was removed to a considerable extent. This seems to have also been the case at Great Chesters,[2] where the remains of buildings, all apparently of late work, have been found in a similar position. At the east end of several barracks at Chesters (p. 100), the *intervallum* road was laid bare some years ago, and between this and the rampart-wall was a vacant

[1] *Arch. Aeliana*, xxv, p. 245. [2] *Ib.* xxiv, plan.

space about 12 ft. wide, which apparently represents the bottom of a bank, the remains of which were probably removed unnoticed in the course of the excavation.

The wall of Caerwent [1] contrasts with the foregoing examples in its great size and better preservation, standing in places to a height of 20 ft. or more. The face is vertical, rising from a projecting plinth of large tabular stones. The thickness at the base is from 10 to 11 ft., and this is reduced upwards by offsets at the back to 6 ft. 6 ins. at the existing summit. The foundation is about 3 ft. deep, and consists of rough stones laid without mortar, clay, or other binding material. The front facing is of the local limestone and sandstone, roughly squared, and laid in regular courses. The back facing varies considerably and is

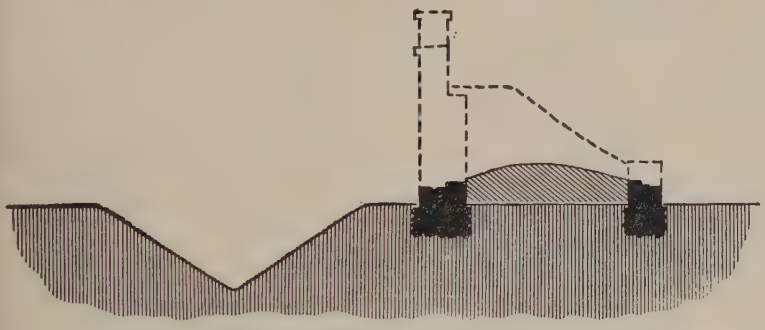


FIG. 15.—Section of Ditch and Rampart, Gellygaer (restoration of rampart in broken lines). (15 ft. to 1 in.)

sometimes very rough, and this, together with the different heights and widths of the steppings, indicates that the wall was built in lengths by different gangs of men. The method of construction is clear. As each course of the front and back facings was laid, the intervening space was levelled up with rough pieces of stone, inclined or on end, and over their upper surface was spread gravelly mortar, but with no attempt to fill the interspaces. The wall has broad pilaster-like projections at intervals on the inner side, and attached to the exterior of the south wall are several large bastions. On the north side of the town two ditches have been cut through, both having a rounded V-form, the inner being about 15 ft. from the wall and 20 ft. wide, and the outer somewhat smaller; while on the east and west sides a

[1] Personal observation.

broad hollow marks the line of at least one large ditch. The earth-bank behind the wall is still an imposing feature, and, as already stated, the wall was a late addition.

The Roman wall of Cardiff Castle [1] was brought to light a few years ago in the condition in which it was buried under the great medieval earthwork, and remaining to a height of from 12 to 15 ft. It resembles the wall of Caerwent in its general form and dimensions, but is more strongly and solidly built. The facings are of squared and slightly hammer-dressed blocks of lias limestone laid in mortar, the intervening space being packed with river boulders and broken limestone, all consolidated into a singularly hard mass with grout. The wall rests upon a foundation of these boulders deposited in a trench about 15 ft. wide and 1 ft. 10 ins. deep. Over these was spread a layer of mortar, upon which was laid the plinth-course, 11 ft. wide and 8 ins. thick. The wall above for the first 7 ft. 6 ins. is 10 ft. thick, but at that height it is reduced by four offsets on the inner side to 8 ft. 6 ins. The front facing rarely remains to a greater height than 3 or 4 ft., and its weathered condition tells of long exposure. The back facing, although of inferior workmanship, is better preserved and remains to the height of 10 or 11 ft. This is owing to the presence of a Roman bank of about this height, the soil of which was evidently derived from the foundation trench of the wall and a ditch, of which, however, nothing remains, as along its line the medieval castle-builders cut their larger ditch.

The wall of Burgh Castle [2] also resembles that of Caerwent, but it presents a very different appearance, being constructed of flints, with tile courses at intervals. It still remains to a general height of 15 to 16 ft. The facings are of split flints with their fractured surfaces outwards. The flints are laid in mortar, pink with pounded brick, and the triple tile-bands occur at every five or six of their courses. The tiles are, as a rule, only one row deep, showing that their function is to lace the flint facings to the core. The wall is stepped back behind, reducing its thickness to 8 ft., and the facing on that side is rough and without tile courses. The foundation is said to be of puddled clay overlaid with a stratum of flints, in a shallow trench. It is supposed that the wall was lined with an earth-bank which has been ploughed down, but there is no evidence for this, nor for a ditch.

[1] *Archaeologia*, lvii, 340.

[2] Personal observation.

The walls of Richborough, Lympne, and Porchester resemble the last two, except in their greater thicknesses. They are all strongly built structures of grouted rubble and boulders, with tile bands, and faced, at least on their fronts, with squared stones of local origin. The great thickness (14 ft.) at Lympne is due to the shifty nature of the soil, which demanded a wide base. According to Mr. Roach Smith, it simply rests on the natural surface; but it is probable, as in the case of the sea-wall at Burgh Castle, that it had a foundation of piles which have disappeared. Recently the walls of Pevensey, 12 ft. 3 ins. thick, have been found to rest upon piles. In none of these examples has a mound or a ditch been observed.

We now pass to the remarkable Scottish forts described on pp. 26–30. The ramparts of Camelon, Lyne, Ardoch, and Birrens [1] so closely resemble one another that we shall treat them together; but it may be mentioned that the last has several points of difference from the others. Although 'earth' forts, the structure of their ramparts is more complex than the 'tumultuary' work of Vegetius. Their defensive lines have been cut through in several places; but, as might be expected, the rampart sections were confused through the spread of the materials beyond their original limits. The sections (Fig. 16) are selected from those of the reports, but have been simplified to render comparison easy. These sections are as follows: The south defences of Camelon, and the inner portions of those on the east sides of Ardoch and Lyne and of the north side of Birrens, the space not admitting of the whole of the complex defences of these being shown.

Underlying all these ramparts are rough pavement-like foundations (shown in solid black) laid on the old natural surface. At Camelon, we have an outer spread of rough stones, bedded in clay and varying in width from a single stone to about 4 ft. 9 ins., where excavated; and an inner, which also varied in width, and in one place consisted of two courses of stones. The outer was only found on those sides where there is a ditch. These strips are the footings of the inner and outer faces of the rampart, and indicate a width of about 40 ft. for the latter. The corresponding strips at Lyne are each about 4 ft. wide and indicate a rampart of about 23 or 24 ft. At Ardoch, the outer strip

[1] *Soc. Antiquaries Scot.* xxxv, p. 351; xxxv, p. 167; xxxii, p. 412; and xxx, p. 97.

is much wider, being from 7 to 8 ft. in width, with roughly dressed stones along the outer margin; and the inner varies considerably, taking the form of paving, or a rough spread of cobbles, or a wall of several courses, the original width of the rampart being about 33 ft. At Birrens, the main underwork is from 18 to 19½ ft. wide, and is constructed of tabular polygonal stones neatly fitted together; and set back about 1 ft. from its outer edge was found in most places a narrow second course about 3 ft. wide. This pavement-like structure carried the main body of the rampart; but along the west side of the fort is a strong kerb, formed of a double row of large stones set in the ground, about 10 ft. from the inner edge of that foundation, which appears to have a bordered terrace behind the rampart.

The ramparts of these forts are of stratified structure. In that of Camelon, the base is of large pieces of split wood and branches mostly laid in a longitudinal direction and mixed with peat and clay. Above these were usually noticed thinner layers of the same; and still higher, consolidated sand and gravel with a little clay. In all sections was observed a mass of puddled clay resting on the outer stonework, and tailing outwards above. There is no doubt that this clay was the facing of the rampart, and that the tailing was due to the spreading outwards of its upper portion. Clay in a similar position at the back of the rampart was observed here and there. The rampart at Lyne, which is much worn down, is formed of layers of clay and black mould; that of Ardoch, of layers of clay, gravel, turf, and brushwood, with masses of clay on or about the footings, tailing outwards as at Camelon; and that of Birrens, of earth, clay, sods, and brushwood, also in layers; but the remains of clay facings were either absent or not reported. The split trunks and branches at the base of the Camelon rampart may have formed a rumble drain, to keep the earthy materials above dry; if so, the clay and peaty matter, "wet and slimy," that filled the interstices, were probably washed down from the layer above. Although no mention is made of outlets through the outer footing to carry off the accumulated water as in the Antonine Wall, they might easily have escaped notice, as the exploratory cross-trenches were few. The presence of timber is not mentioned in the reports of the other forts, but the brushwood observed in the ramparts of Ardoch and Birrens may have served a similar purpose.

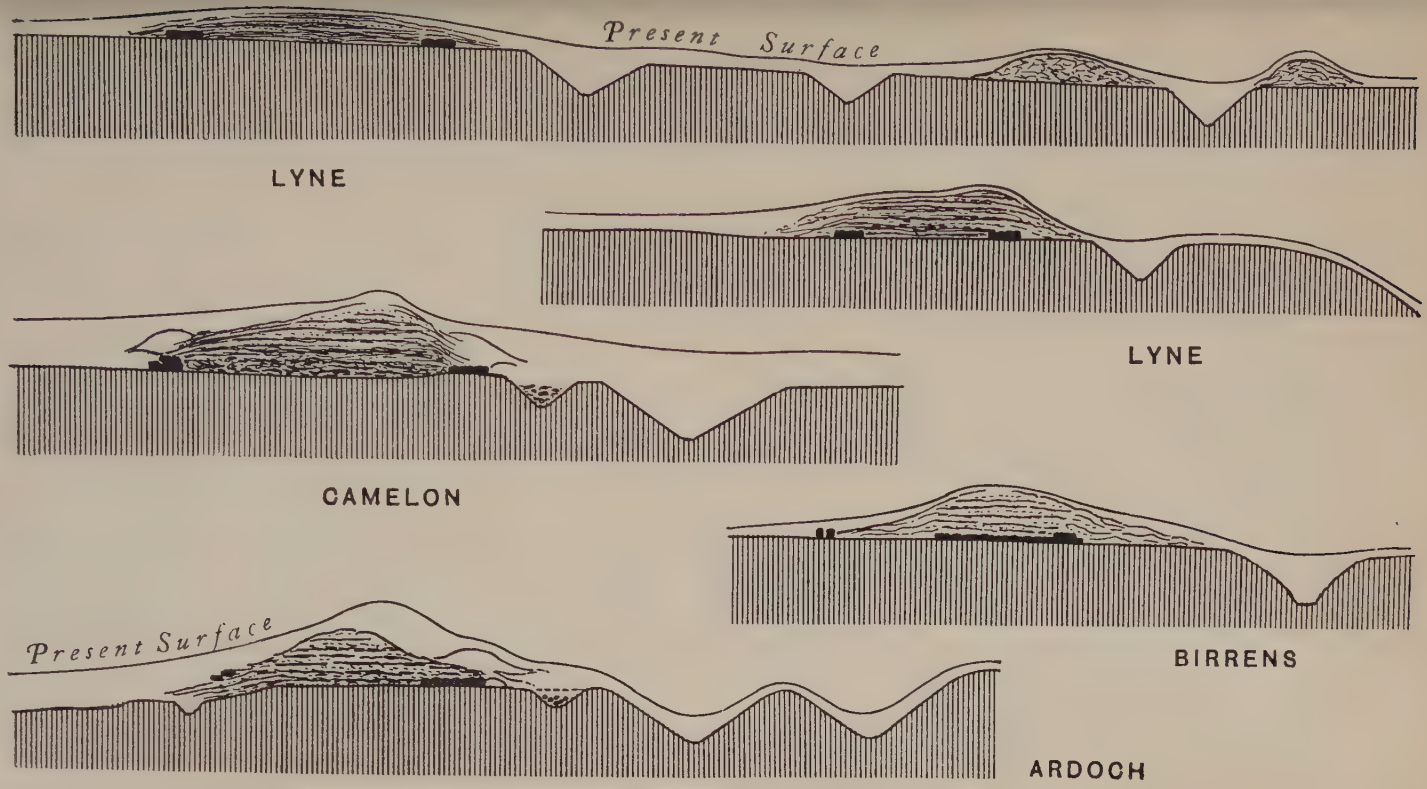


FIG. 16.—Sections of the Fortifications at Lyne, Camelon, Birrens, and Ardoch. (20 ft. to 1 in.)

The ditches of these forts, with the exception of those of Birrens, are of the usual angulated form, but those of Ardoch have rounded bottoms, due, perhaps, to water-wear. The form at Birrens is peculiar in having convex sides and a flat bottom. With the exception of the small inner or berm ditches at Camelon and Ardoch, they range from 11 or 12 ft. in width at Lyne, to 23 ft. at Camelon, and in depth from 5½ ft. to 8 or 9 ft. The small ditches just referred to are less than half the size of their neighbours, and their function appears to have been to keep their respective ramparts dry. The excavations at Camelon proved that in one place at least the berm ditch contained split timbers like those at the bottom of the rampart; and in two cuttings at Ardoch cobble stones were found at the bottom, "which appeared to have been thrown in to form a drain."

The remains of the ravelin ramparts or parapets and outer banks at Ardoch and Lyne, and of the rampart of the great annexe or 'south camp' at Camelon, show no laminated structure and appear to consist of the upcast from the ditches. They also lack the stone bottomings of the main ramparts. The defences of this annexe have an interesting feature. The interval or platform between the innermost and second ditches is expanded on the south and east sides to 27 ft. in width, and a little behind its inner line is a small V-shaped trench, 3 ft. wide. It is too small to have been a defensive obstacle, and from its position it was useless as a drain. It has been suggested that it held a palisade.

The rampart of the free sides of Rough Castle, like the Antonine Wall which closed in the fort on the remaining side, is of turfwork. It rests upon a stone bottoming that varied considerably, "of an average width of not less than 20 ft., supplemented by varying margins adapted to suit special requirements, and increasing the width so that it was nowhere less than 30 ft." The rampart appears to have been originally about 20 ft. in width, but was afterwards supplemented by additions on both sides, making a total width of about 34 ft. The ditches are, as usual, V-shaped, about 16 ft. wide and 8 ft. deep. They are separated by a narrow strip of the original surface, which is capped with a layer of firmly bedded stones, as also are the tops of the opposite brinks; in fact, "this stone lining, at all parts liable to be easily damaged, is a noted characteristic of the whole work." The upcast of the

ditches was used here and there for a glacis-like mound and other external works. Of the rampart of the annexe little remains, but the absence of lamination indicates that it was a simple earth one. It also rests upon a spread of stones, which, however, extends inwards to serve as a roadway 15 ft. wide behind the rampart. The annexe ditch is similar to those of the forts, and its brinks are similarly capped with stonework.

The excavations at Coelbren brought to light several remarkable features in the construction of the rampart. Along the south side where the ground was treacherous, and at the four angles, the rampart was raised upon a bottoming of large oak logs. They were laid transversely in a shallow trench, and were nearly 18 ft. long, or two short logs were used to make up that length, the whole forming a sort of rough corduroy. Upon this foundation was about a foot of dark soil containing decomposed vegetable matter, presumably derived from the trench below. Then followed a layer of branches, mostly of birch, laid irregularly and loosely, perhaps to serve as a bonding-course. The remaining portion of the rampart above was of turfwork. There was evidence that the scarp had been faced with white clay ; while in most of the cuttings, the rear portion of the rampart was darker than elsewhere and extended several feet behind the logs, indicating apparently a greater width for the rampart than the corduroy.

At the rounded corners the logs were laid fan-like at right-angles to the curve, and these platforms were pinned down by stakes driven into the soil beneath. At the south-east corner there were two platforms, one above the other. The cuttings on the remaining three sides of the fort yielded no trace of a log foundation ; but in one or two, the rampart rested on a layer of brushwood. The rampart itself also varied, the turves occasionally appearing to be mixed with earth or clay. Colonel Morgan, in remarking the careful and strong construction of the log foundations of the corners, came to the conclusion that " the engines for missiles were placed only on the angles, as they alone would have necessitated this unusual foundation." The berm on one side at least, was 16 ft. wide. The two ditches are described as V-shaped, the width of the inner averaging 9 ft., and the outer, 7 ft., but the exact depths were not ascertained. There were clear indications of a glacis-like spread of clay, doubtlessly derived from one or both ditches. In the ditches were found a

number of "oak stakes, 9 to 12 ins. long, pointed at one end, with a curious notch below the point, which the Colonel considered to be portions of obstacles placed on the berm." [1]

TURRETS AND BASTIONS

Classical writers mention turrets in connection with fortifications. They are represented on the Column of Trajan, and two of these are shown in Fig. 17, the one set diagonally within the rounded corner of a fort, roofed, and apparently constructed of wood as no masonry joints are shown; the other, certainly of

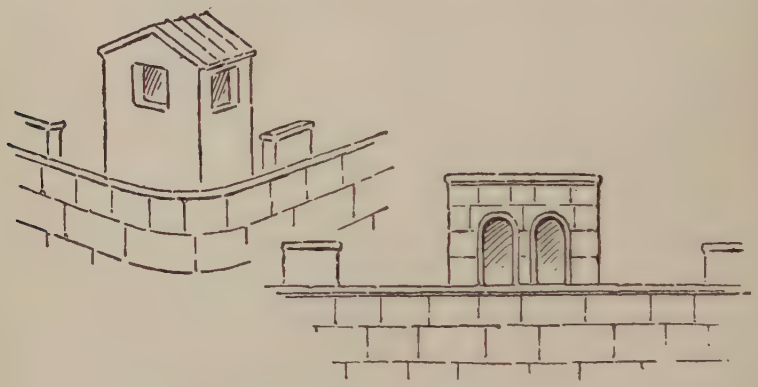


FIG. 17.—Fortification Turrets from Trajan's Column

stone, with a flat top. In the Naples Museum is a remarkable bronze water-heater from Herculaneum, in the form of a small embattled fort with an embattled tower at each corner. The corners of a rectangular fort are its most vulnerable points, as only a few defenders can there be accommodated, and they are liable to be opposed by a large number of assailants; hence the value of turrets in these positions, as they increase the accommodation of the defenders and give them greater 'command.' It is precisely in these positions that the structures we are considering are most usually found. They are shown there, and only there, on the plans of Melandra, Brough, Hardknott, Great Chesters, and Castlecary; while on those of others, as Gellygaer,

[1] Similar stakes have been found at Newstead, and are regarded as tent-pegs.

Housesteads, and Chesters, there are in addition similar structures along the sides. The fallen débris that choked the east corner turret at Gellygaer,[1] contained much wood-charcoal (indicating a destruction by fire) and broken roofing tiles. The latter were near the top, while the former lay at various levels below, showing that the structure was roofed with tiles and that there was much timber-work, some presumably relating to floors, below the roof. More definitely the excavation of the Mucklebank turret [2] on the Wall of Hadrian, described on page 124, proved the former existence of an upper floor.

At Silchester and Caerwent the walls have at intervals broad pilaster-like projections on their inner sides, but whether they should be regarded as the bases of turrets is by no means certain. At the former [3] they are about 12 ft. wide, and at the latter,[4] somewhat wider; and in both the projection is from 18 ins. to 2 ft. They are really portions of the wall carried up the full thickness of its foot; but the one within the south-west corner at Caerwent is an exception, having a greater projection than usual. These 'counterforts,' as they are sometimes called, were certainly not buttresses, as the walls of these cities were too thick and strong to require such supports.

Perhaps High Rochester throws a light on their use. Here the wall for about 80 ft. to the south of the west gate, and nearly 50 ft. to the north, is increased on its inner side to a thickness of nearly 30 ft.; and on the south wall a shorter length is similarly thicker than elsewhere.[5] It is supposed that these thicker portions provided platforms for the great engines for hurling stones; and the existence of such platforms is proved by the discovery of a tablet near the west wall recording the construction of a *ballistarium* in the time of Caracalla, and of another inside the fort recording the restoration of one. Moreover, in this, as in several of the Wall forts, many large rounded stones weighing a hundredweight or more have been found, which certainly were the missiles of *ballistae*. Some thickenings of late work on the inner side of the wall of Housesteads may have had a similar purpose. As the 'counter-forts' at Silchester and

[1] *Roman Fort of Gellygaer*, p. 43.
[2] See p. 124.
[3] *Archaeologia*, lii, p. 752.
[4] *Ib.* lix, p. 94; lx, p. 117, and personal observation.
[5] *Roman Wall*, p. 316.

Caerwent increased the summit of their respective walls to about 10 ft. in width, they would provide solid platforms for military engines of considerable size.

It is noteworthy that no traces of turrets have been reported in the case of the Scottish 'earth' forts. This, however, does not disprove their former existence, as they may have been of timber. At Coelbren the corners of the fort rested upon specially strong foundations (p. 57); but this may indicate nothing more than that it is just at these points where a rampart requires special strength. The patches of stone foundation at Castleshaw, on the other hand, are not *under* but *behind* the rampart at these points; but whether they supported turrets or *ballistaria* is uncertain.

Bastions have already so frequently been referred to that their forms need not detain us further, beyond a reference to Fig. 18, which gives their plans to a common scale. They are normally solid structures, at least to their existing heights; but there are several exceptions. At Cardiff, the middle bastion [1] of the east side is solid to the height of 6 ft. 6 ins.; but above that height it was found to enclose a chamber of its own shape. In our next section reasons will be given for thinking that this chamber contained a postern (p. 33). At Caerwent are the remains of three large polygonal bastions along the western half of the south wall. Each is solid below and has a chamber above with a mortar floor, and at intervals on its level drain-holes through the outer walls, several of which retain a semicircular channel of mortar. These bastions are peculiar in another respect. They are not parts of the original construction of the town wall. Their foundations are separate and deeper; and when they were built large holes were roughly cut in the face of the wall, into which their masonry was toothed. Portions of their outer walls still stand 11 ft. above the internal floors, but without any signs of loopholes or other openings.[2] It would appear from this that their basements were not used for defensive purposes, but probably for storage; and they must have been reached from above, as the rampart-wall is continued along the back without a break.

At Cardiff, the bastions are bonded into the wall and are of one construction with it, as also at Lympne and Pevensey. At

[1] *Archaeologia*, lvii, p. 342. [2] Personal observation.

FIG. 18.—Plans of Turrets and Bastions. (30 ft. to 1 in.)

Richborough and Burgh Castle, on the other hand, the lower portions of the bastions are built *against* their respective walls, but their upper portions are *bonded* into them. This has given rise to the supposition that these forts were originally without bastions, and were afterwards ruined or partly pulled down and reconstructed on bastioned lines; and a well-defined break in the core of the Burgh Castle wall, about 8 ft. above the ground, is held to substantiate this. But the writer finds that the summit of the lower part of the wall at this break is not rough, like an old ruined wall, but is finished off, roof-like, and smoothed over with mortar, as if with the view to prevent the access of rain to the core below.[1] Externally, the whole work has every sign of being the production of the same builders, the facework above and below being identical in appearance. The break seems to represent a halt, conceivably a winter's cessation of the building operations; and the omission of the bastions in the first stage of the work may simply be due to a desire to raise a barrier with the least expenditure of labour before the winter set in. At Richborough, the corners of the lower portion of the wall are rectangular, and if they represent an earlier unbastioned work, we have the anomaly of a return to an old type of Roman fort that was abandoned before the conquest of Britain, for one with rounded corners, and this certainly militates against the theory that the bastions were an afterthought.

With regard to the original heights of the bastions, their remains at Cardiff, Caerwent, Burgh Castle, and Pevensey indicate that they were at least as high as the existing remains of the walls. At Burgh Castle, long stretches of the wall have the uniform height of from 16 to 17 ft., and the flat tops of the better preserved bastions are as high, giving the impression that this level approximates to the original height of the whole work, less the parapets. It is possible, of course, that the bastions were surmounted with structures of timber or of slighter masonry; but their tops have the curious feature of a central shallow hole about 2 ft. in diameter, which may have received the pivot on which a military engine revolved.[1]

[1] Personal observation.

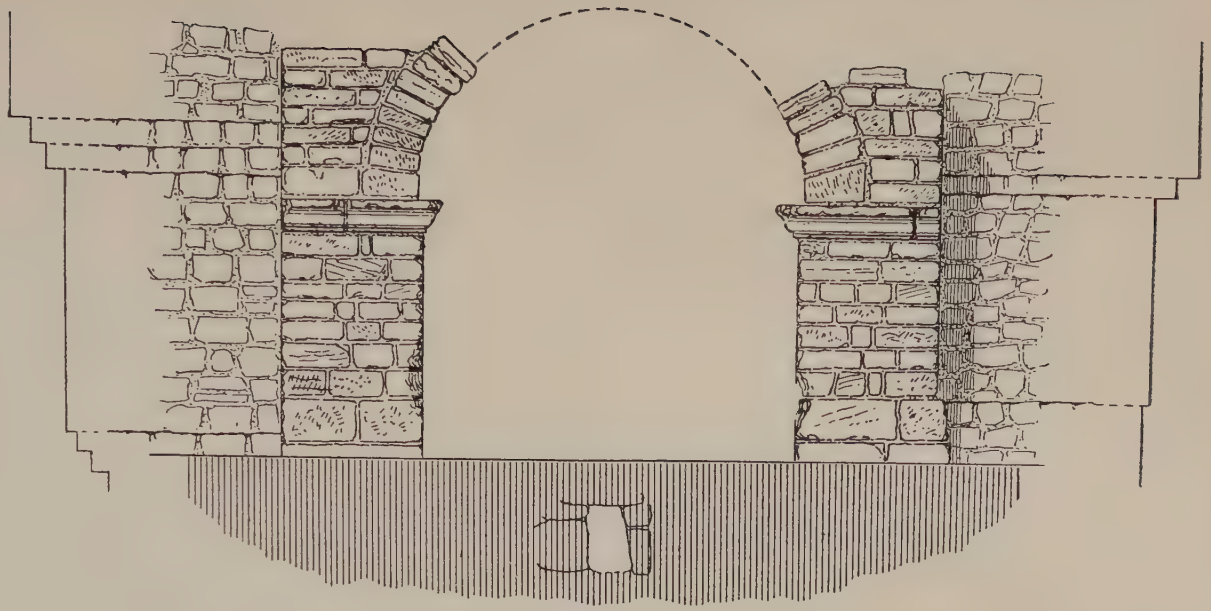


FIG. 19.—South Gate, Caerwent. Elevation of inner face, with inner profile of Town Wall on either side. (4 ft. to 1 in.)

GATES AND POSTERNS

With few exceptions to be noticed presently, the gates of the forts and fortified towns of which we have any knowledge, were stone structures. The masonry was usually better and more massive than that of the ramparts; and as they received some degree of architectural treatment and embellishment, they must, in a pleasing manner, have broken their monotonous lines. The tablets recording their construction or restoration were sometimes highly ornamented, as one found at Risingham and another at Lanchester indicate.[1] The structures varied greatly, but a considerable number followed a common model, and examples of those will be considered first.

The north and south gates of Caerwent[2] are excellent examples of gates with single passages. They are of like size and design, and while the south gate is the better preserved, the north gate still retains portions of its external front, which has fallen in the other. In each, the general structure is apparently older than the rampart wall, and is rectangular, about 15 ft. wide and 14 ft. deep, with a passage 9 ft. 6 ins. wide. This passage is contracted at the front and back to 8 ft. 9 ins. by projecting jambs. These had moulded imposts and carried arches, portions of which remain. Fig. 19 is an elevation of the back or town front of the south gate, with the wall abutting against the sides of the structure: the external front was probably similar. In the angles behind the front jambs of the north gate are still to be seen the blocks of stone, level with the roadway, which contain the sockets in which the door-pivots turned. The doors were in two leaves, which, when open, fell back into the recesses between the front and back jambs.

The architectural treatment of the two gates is conjectural. The rampart-walk was somewhat higher than the crown of the arches, and was probably continued over the space between them by a timber floor. Two pieces of moulding found near the south gate may have belonged to a cornice above the arches; and the many roofing-tiles about the site suggest that the passage of the rampart-walk was through a covered chamber,

[1] *Roman Wall*, pp. 333, 347.
[2] *Archaeologia*, lix, p. 87, and lx, p. 111.

as in the third and fourth illustrations of Fig. 20, which are fortification gates sculptured on the Column of Trajan. The first and second lack upper chambers, and in the latter is shown the timber parapet of the rampart-walk over the gate. The second two have chambers with windows over the portals, and doorways at the sides by which they were entered from the rampart. The arched entrance and windows of the fourth example show that it was intended to represent a stone structure.

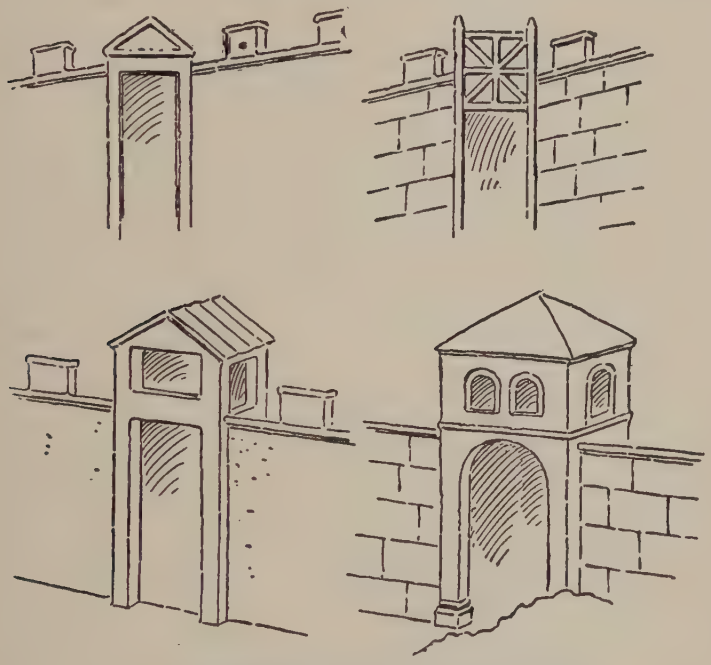


FIG. 20.—Fortification Gates from Trajan's Column

Of similar character were the gates of the mile-castles of the Wall,[1] of which each had two, level with the fronts of their respective walls, but projecting behind. Those of the mile-castle near Housesteads are the best preserved. The widths of the openings are nearly 10 ft. The massive jambs have plain square caps on which still remain the springers of the arches, each gate having two as at Caerwent.

The remains of two-passage or double gates may be seen

[1] *Arch. Aeliana*, iv (O.S.), p. 269. *Roman Wall*, p. 202.

at Housesteads, Birdoswald, and Great Chesters; but those at Gellygaer [1] indicate a somewhat simpler construction. All the gates of this fort were precisely alike, but the south-west one was the most thoroughly explored. The passages of this gate, as will be noted in Fig. 21, were similar to those at Caerwent. Their contracted openings were also of similar width, and the pilasters were arched, as indicated by the well-shaped voussoirs of calcareous tufa found about the sites. One of the thresholds still remained intact and consisted of two long flagstones containing the sockets for the door-pivots and two square bolt-holes, with a raised rim on the outer side formed of two other flagstones set on edge in the ground. This rim sheathed the bottom of the doors when closed, and it exhibited two worn hollows about $4\frac{1}{2}$ ft. apart, made by the passage of wheeled vehicles. On either side of the gate was a guard-chamber, the front of which was a continuation of the rampart-wall, and in the back was the doorway by which it was entered. The front of the gate was set back from the rampart face nearly 6 ft. That these gates, or some portions of them, were roofed with tiles, was proved by the broken red roofing-tiles about their sites.

The double gates of the Wall forts mentioned above were similar, but of stronger construction, and this is especially noticeable at Housesteads. Those of Birdoswald [2] most closely resembled the Gellygaer gates in their planning, but were on a larger scale, the openings being nearly 12 ft. wide, Fig. 22. Those of Housesteads, as also of Chesters and Great Chesters,[3] differed in two respects. The intervening wall between the passages, instead of being solid, had a central opening, probably arched; and the guard-chambers were entered from the passages. All the gates were set back from their respective rampart faces, but those of Housesteads less so than the others; while the guard-chambers at Great Chesters had the unusual feature of being slightly in advance of that line. The thresholds were generally constructed of a row of large stones, with their outer margins raised to form a rim, and in a few instances there was a central stone stop-post as well. The door-sockets were sometimes cut in the bottom stones of the jambs which projected for the purpose.

[1] *Roman Fort of Gellygaer*, p. 39. [2] *Arch. Aeliana*, iv (O.S.), p. 63.
[3] *Roman Wall*, p. 181. *Arch. Aeliana*, vii, p. 171; xxiv, p. 26.

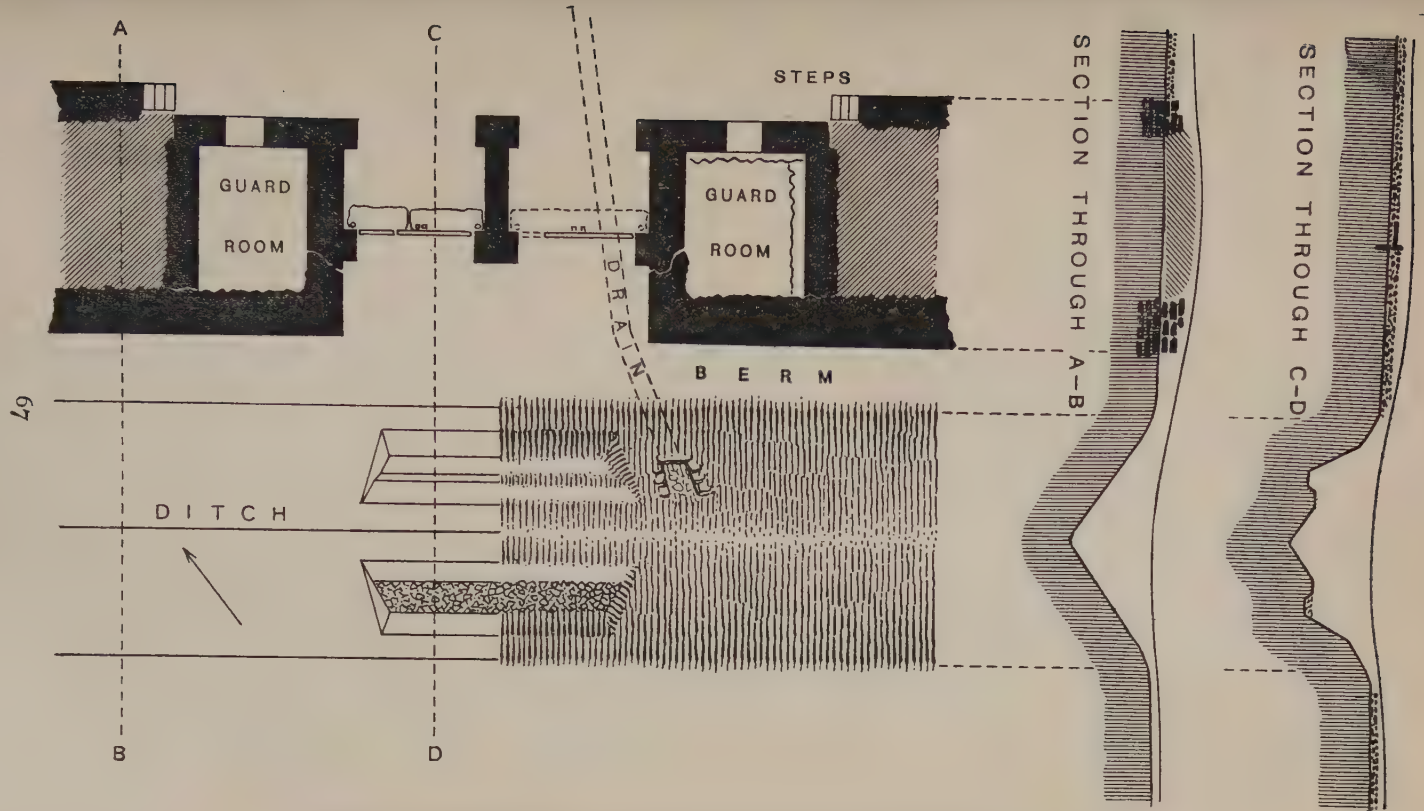


FIG. 21.—Plan of South-west Gate and Ditch with sections, Gellygaer. (15 ft. to 1 in.)

While the *castella* named above had double gates, the supplementary gates at Birdoswald and Chesters were single ones. The north and south gates at Caerwent were not the principal ones, which may prove upon excavation to have been double. Small forts, like the mile-castles, usually had single gates, but there were large forts with only single gates. High Rochester is an example.[1] To judge from its west gate, which is the least ruinous, they were of simpler character than those of Caerwent, having a single pair of jambs each, deeply set back from the rampart face. The lateral gates at Birrens [2] appear to have closely resembled those at Caerwent, and the north gate was remarkable for the great length and narrowness of its passage. Those at Castlecary [3] were very ruinous, but were apparently of a single span each. Those at Camelon [4] were still more ruinous. Their side walls were from 20 to 22 ft. apart, but on either side of the roadways were deep post-holes which reduced the width to the proportions of a single span. In three of the gates at Bar Hill [5] were found the stumps of oak posts in like positions, three on each side. According to Dr. Macdonald, these posts retained the vertical ends of the turfwork rampart and supported timber gangways, but were not the posts of the actual gates ; but it is difficult to understand why they should not have fulfilled all three purposes. The Lyne gates [6] were wholly of timber, simple, and of a single span each. At Ardoch [7] they were also of timber, and the post-holes of the east gate indicated a complicated structure of the depth of the rampart and divided into three parallel spaces, of which the middle was apparently the passage, and the outer possibly guard-chambers. It will be noticed that this gate alone of the examples given in this paragraph had traces of these chambers.

On the sites of some of the gates of the Wall forts, and notably at Birdoswald, have been found door- and possibly window-heads. Similar heads were used in Norman and Early English work, but the Roman examples, when otherwise than plain, are treated as sunk panels containing ornamentation in the spandrels. They are generally regarded as the heads of the guard-chamber doors,

[1] *Roman Wall*, p. 317.
[2] *Soc. Antiquaries Scot.* xxx, p. 101.
[3] *Ib.* xxxvii.
[4] *Ib.* xxxv, p. 357.
[5] *Roman Forts on Bar Hill*, p. 22.
[6] *Ib.* xxv, p. 173.
[7] *Ib.* xxxii, pp. 417, 447.

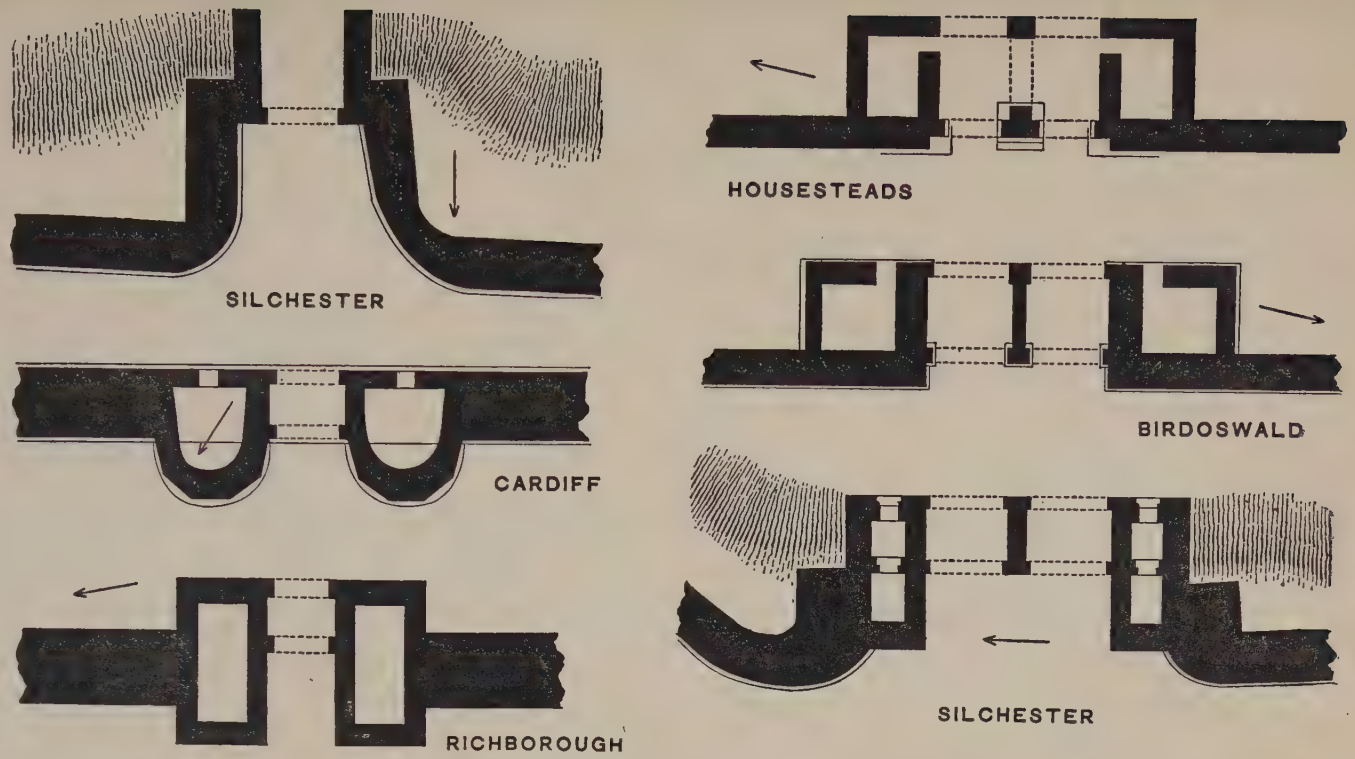


FIG. 22.—Plans of Roman Fort and Town Gates. (30 ft. to 1 in.)

but at Birdoswald they are numerous, and some are rather small for doorways. These may be window-heads, and may have belonged to the windows of upper structure.

The walls of the guard-chambers are usually of considerable thickness, as though to sustain lofty superstructures; and the resemblance of these chambers to the turret basements is decidedly convincing in this respect. It is interesting to find that a gate figured on a mosaic in the Avignon Museum has its guard-chambers carried up as two turrets. In Fig. 23, this gate is reproduced from *Collectanea Antiqua*.[1] It has two arched portals with three windows above, and on either side will be noticed the window of a guard-chamber and two smaller ones over it. The whole structure, as also the rampart-wall, is

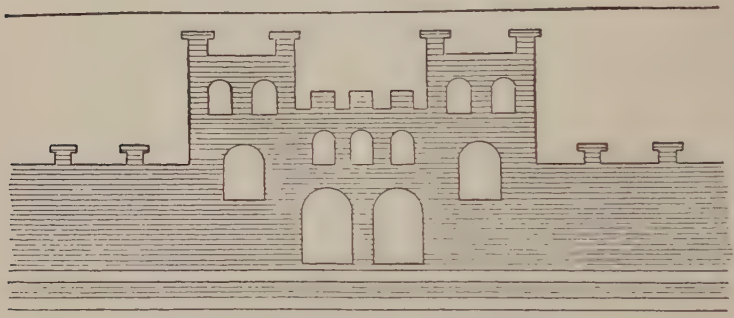


FIG. 23.—Gate of Fort on Mosaic, Avignon Museum

embattled, and the merlons of the latter and of the turrets are wide apart and have projecting copings as in the sculptures of Trajan's Column, while those of the middle portion of the gate are closer together and are not capped. The delineation admirably fits in with what we know of the double gates in this country, but the roofs are shown as flat to accommodate defenders, whereas at Caerwent and Gellygaer there is evidence for tiled roofs. A glance at Figs. 17 and 20 will show that the Romans did not exclusively adopt one or the other, but it is probable that in a rainy country like ours gates often had tiled roofs.

The gates to follow not only differ from those already described, but they differ more or less from one another. The Balkerne or west gate of Colchester appears to have been on an unusually

[1] Vol. v, p. 35.

imposing scale, and its ruins are one of the most conspicuous vestiges of the Roman town. Like the wall, it is built of a local chalkstone with lacing-courses of tiles. The southern third of the structure remains to a considerable height, and consists of a narrow arched passage and a quadrant-shaped guard-chamber. The northern two-thirds, with the exception of the curved wall of the other guard-chamber, have long been removed, and the site is occupied by an old inn. Mr. Roach Smith [1] and Dr. P. M. Duncan [2] respectively, described the remains in 1847 and 1855, and both considered that they indicated a gate with a wide carriage way and a narrow one for foot passengers, or possibly two, one on either side of the former, with a guard-chamber to the south, and one or two larger chambers to the north. The writer, however,

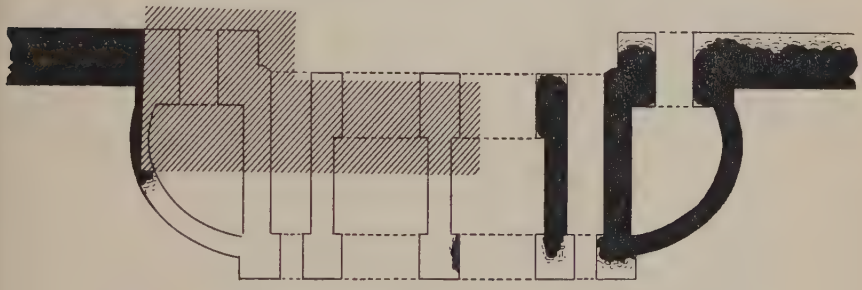


FIG. 24.—Plan of the Balkerne Gate, Colchester. (30 ft. to 1 in.)

suspected that the structure was symmetrical, with *two* carriage ways and two for foot passengers, the whole being flanked by two quadrant-shaped guard-chambers. An examination of the remains somewhat confirmed this, and it was further confirmed by measurements and a plan made by Mr. Arthur G. Wright, the curator of the Colchester Museum; but without the evidence of the spade it is hardly possible to go further. In the plan, Fig. 24, the visible remains are indicated in black. It will be observed that the whole structure is in advance of the town wall, also that the outer or curved walls of the guard-chambers are thinner than the intervening walls. This is suggestive that the main fabric of the gate was rectangular, 60 ft. in width and 30 ft. in depth, and loftier than these chambers, with two large arched ways flanked with two smaller, and a storey above, the

[1] *Brit. Arch. Assoc.*, ii, p. 29.

[2] *Essex Archaeo. Soc.* i.

whole probably resembling the Porte d'Arroux at Autun and having a similar series of arched openings above the portals.

A considerable portion of the north gate of Lincoln—the Newport Arch—is standing, but is buried to the extent of about 8 ft. in the soil and débris accumulated since Roman times. The structure is about 34 ft. deep and has a single passage for the road, 17½ ft. wide. The inner or back portal of this passage is still intact, and is nearly 16 ft. in the clear and rises to a height of about 22½ ft. above the Roman level. Its arch is of a single ring of large limestone voussoirs rising from imposts which appear to have been moulded. The outer or front arch has long since disappeared. On the east side is a postern for pedestrians, 7 ft. wide and contracting to about 5 ft. at the north end, and 15 ft. high from the Roman level. On the west side there was a similar postern about a century ago. The whole structure is of good masonry, and it appears to have projected considerably beyond the north face of the town wall.

The other gates of Lincoln [1] appear to have been of like form, size, and construction. The west gate is buried in the post-Roman earthwork of the castle, but its front was exhumed in 1836. The excavation was deep enough to expose the arch of the carriage-way, which was of precisely similar character to that of the Newport Arch; but the most interesting feature was the remains of the storey above. The weight of soil had considerably pushed its masonry out of the perpendicular, but enough was left to indicate that there were three window-like openings over the arch, and these are said to have been 4 ft. wide. In a contemporary lithographed view [2] of this gate, one of these openings is shown remaining to the springs of its arch, apparently 5 ft. or more high and between 3 and 4 ft. wide. One side of the gate was sufficiently disclosed to show a similar opening on the same level. The excavation was not deep enough to reach the posterns; but the structure as shown in the view does not seem wide enough to have included these, and it is obviously out of scale, not agreeing with the few measurements given. A comparison of the two gates (the north and the west) indicates a frontage-width of about 47 or 48 ft., and an original height of not less than 40 ft. How the summit was treated

[1] E. M. Sympson, *Lincoln*, p. 26–9.

[2] Reproduced in *Lincolnshire Notes and Queries*, viii, p. 225.

FIG. 25. THE 'NEWPORT ARCH' (ROMAN NORTH GATE), LINCOLN

is, of course, a matter of conjecture. The sides, like the fronts, may have had three openings each, the third deeper and serving as a doorway from the parapet-walk of the wall. Possibly the guard-chambers were external, flanking the ground storey of the main fabric, as seems to have been the case at Colchester.

The four principal gates of Silchester,[1] of which the east and west were double ones and the north and south single, differed from all described above in having definite means of enfilading them. This was accomplished by their structures being deeply set back between incurved returns of the rampart-wall (*see* Fig. 22), hence an assailant would not only be resisted by the defenders of the gate itself, but would be subjected to the cross-fire from these returns. The north and south gates resembled the corresponding gates at Caerwent. The west gate was more complex. The returns of the rampart-wall were of great thickness, as if to serve as *ballistaria*, but more probably for another reason. The gate had the usual guard-chamber on either side, and in addition, a room entered from it, in advance of the front of the gate and constructed against the returns, the two rooms forming an oblong structure with walls of considerable thickness. It is probable that these two structures were carried upwards as two towers, and that the great thickness of the returns was to provide suitable substructures for the outer side-walls of their advanced portions, and in addition, space for access from the rampart-walk to doors in these walls. It will be observed that the inner sides of these advanced portions of this west gate and the returns of the rampart at the north gate provided a considerable length of flanking defence for their respective gates. The east gate was similar but deeper, and if anything, of stronger construction.[2] All these gates had brick arches, and timber thresholds with sockets near their ends to receive the door-pivots. The iron sheath, $3\frac{5}{8}$ ins. in diameter, of one of the sockets was found; also two U-shaped iron straps that were apparently used to bind the doors, and indicate for these a thickness of about 4 ins.

The north gate at Cardiff Castle, Fig. 22, has a single opening with an outer and an inner pair of jambs, the depth of the passage being 10 ft., representing the thickness of the wall; but the guard-chambers have projecting polygonal fronts like

[1] *Archaeol.* lii, p. 750; lxi, p. 474. [2] *Ib.* lxi, p. 475.

those of the bastions, only a trifle smaller. The original door-sockets were in the backward projections of the bottom stones of the front jambs; but at a later date the roadway was raised and two large socket-stones were introduced at a higher level. These sockets have the unusual feature of a shallow recess cut in the side, which evidently received a corresponding projection on the iron lining or shoe, to prevent it revolving with the pivot. The later roadway, at least, had no ledge or rim across the threshold, but instead, a central stone door-stop.

The only gate at Richborough that has been explored [1] was found to contain a single passage between two oblong guard-chambers which boldly projected on either side of the wall, Fig. 22. There were two pairs of jambs, and the outer were deeply set back in the passage. It is evident that the guard-chambers were an important feature, and were carried upwards as two large towers; and their bold projection would more effectually protect the approach to the arched opening than at Cardiff.

The remaining gate at Porchester seems to have resembled that of Richborough. That at Burgh Castle is now a mere gap in the wall, but its width admits of a similar gate structure, also of a single span. The great gate at Pevensey resembles that at Cardiff in being flanked with bastions; but these bastions are precisely like the rest in this remarkable fort, solid, of great projection, and with rounded fronts. Of the gate-structure itself few traces remain; but it appears to have contained a single passage between two oblong guard-chambers as at Richborough. The whole, however, was so far set back between the bastions that the space between these formed a cul-de-sac about 30 ft. wide and nearly as deep, thus providing accommodation for a large number of defenders.

Posterns are not found as parts of the original construction of the forts of the earlier type, the two additional gates at Chesters and Birdoswald being too large to be regarded as such. It is of common occurrence that double gates have been reduced to

[1] *Arch. Cantiana*, xxiv. Through a misinterpretation of the remains, it is represented as a *double* gate, but Mr. John Garstang subsequently corrected the mistake in the *Trans. Hist. Soc. of Lanc. and Cheshire*, lii, from the results of the Cardiff excavations.

FIG. 26. ROMAN NORTH GATE (INNER OR SOUTH SIDE), CARDIFF CASTLE

single openings by blocking up one of the portals, and that the remaining openings, as also those of single gates, have been curtailed to the proportions of posterns. In most cases these changes were effected in late Roman times. At Ribchester, Mr. Garstang discovered the remains of a curious sunk passage, 3 ft. wide, which passed through the turret and rampart-wall at the south corner of the fort; but as it made a right-angled turn and apparently ended in a well, it seems less likely to have been a postern than a passage to obtain water.[1]

Posterns, however, seem to have been usual in the bastioned forts. At Burgh Castle a small and simple opening through the wall has been observed close by the middle bastion on the north and south sides. At Richborough the middle bastion on the north side conceals an ingenious narrow passage slightly above the ground-level, which ends in a narrower portal in the east side of the bastion, Fig. 27. At Cardiff the middle bastion on the east side contains a small chamber, as stated on page 33. From the analogy of Richborough it is probable that this chamber was connected with a postern. The back of the chamber is continuous and remains to the height of the Roman wall generally, so that the access was probably from the rampart-walk by means of a ladder. Portions of the outer wall remain, but it is noteworthy that it is almost wholly broken away on the north, so that there may have been a small doorway on that side of the bastion from which the ground outside the fort was gained by another short ladder. It is probable that, as at Burgh Castle, the opposite sides of the last two forts had similar posterns. If it is permissible to draw a conclusion from very slender evidences, it is that these quadrangular bastioned forts still retained the four entrances of the Hyginan type, but that two of them, possibly representing the lateral gates of that type, were now reduced to mere posterns.

FIG. 27.—Posterns at Pevensey and Richborough. (30 ft. to 1 in.)

[1] *Roman Ribchester*, p. 8.

Lympne and Pevensey differ from the foregoing in their irregular form and the unsymmetrical disposition of their entrances. In the east wall of the former may be seen two small gaps about 5 ft. wide, which were probably posterns. Pevensey had at least one postern. One was recently opened out in the north wall. Its passage is curiously curved and widens inwards, the internal orifice being about 8 ft. in width, and the external considerably less, Fig. 27.

The approaches to the gates were of two kinds—'causeway' and 'bridge' approaches. In the former, the ditch or ditches were discontinued in front of the gate, leaving a space sufficiently wide for the road. In the latter the ditch was continuous, and the road crossed it on a bridge. The approach to the south-west gate at Gellygaer, Fig. 21, is a good example of the second kind. Immediately in front of the gate, the ditch was found to have its sides stepped out for about 18 ft. These steps undoubtedly received the supports of a wooden bridge. The inner half of each had a shallow chase which was filled with the remains of concrete. The earth immediately above showed signs that a beam had rested upon the concrete, and this apparently was the sleeper of the supports of the bridge-platform. Perhaps the middle and wider span of the platform was made to draw up, and was operated by chains from the upper part of the gate. A cutting in front of one of the smaller gates at Silchester [1] proved that the ditch at that point was 80 ft. wide, this greater width than elsewhere being due to the suppression of the berm. Near the middle of the broad flat bottom was found a low gravel bank that evidently supported the trestles of the bridge, and it is possible that the shorter span, next the gate, was a drawbridge. A similar bank was found in the ditch, which was here 76 ft. wide, in front of the Roman gate at Aldersgate, London, about twenty years ago.[2] The ditches are continued in front of the gates at Caerwent, and at Great Chesters, Birdoswald, Housesteads, and probably other Wall forts. The 'causeway' approaches were usually simple and direct, that is, they were at right-angles to the line of the rampart; but in some of the Scottish forts they were more or less devious or even intricate. At Lyne, that to the east gate was direct between the returns of the ditches, and was flanked at the

[1] *Archaeologia*, lv, p. 428. [2] *Ib.* lii, p. 609.

entrance by the expanded ends of the rampart of the outer terrace. The opposite gate had a similar direct approach, which was dominated by an isolated mound or traverse at some distance from its entrance. The approaches to the lateral gates, on the other hand, had a somewhat zigzag course, effected by one of the ditches having its interval on one side, instead of in front of the gate. The north gate at Ardoch was reached by a long oblique causeway through the intricate outer works on that side of the fort. The approach to the east gate is in good preservation, and is at right-angles to the rampart, but its entrance is rendered oblique by an angled extension of the outermost ditch. This approach yielded upon examination some interesting evidence of timber protective works. Along each side were a number of post-holes of a strong fence or palisade, and across it at intervals were others apparently of three gates. Remains of such structures have not been observed elsewhere : they were looked for at Lyne, but were not found.

SUMMARY AS TO SEQUENCE

While typologically the ' earth ' forts may be older than the ' stone ' forts, a strong doubt was expressed on page 47 whether this in itself could be accepted as a test of age in Britain. The rampart of Caerwent, it is true, was of earth only, before it was faced with wall, and recent investigations have proved that some, at least, of the Wall forts had originally ramparts of earth or of turves. But although the latter forts were remodelled, and even, in two or three instances, enlarged when reconstructed in stone, the new work was still on the lines of the camp of Hyginus—the lines also of the Scottish ' earth ' forts. If Birrens had a stone wall and gates like Housesteads, Chesters, and Gellygaer, it would as little differ from them in its general planning as these do from one another, except in its numerous ditches. All we can say for certain, so far as present evidence goes, is that no ' earth ' fort was raised during the second half of the Roman era in Britain.

If, on the other hand, the fortifications of the Wall forts are compared with those of the bastioned forts, we at once observe differences that can only be explained by a change in the principles of defence. In the one group we have walls that rarely exceed 6 ft. in thickness, internal turrets, and four large double gates :

in the other, walls 9 to 10 ft. or more thick, external bastions, gates of a single opening each, and posterns. The gates, moreover, of the former closely adhere to one model; while those of the latter not only differ from them, but show little agreement among themselves, and instead of four, there were two at most. The Wall forts are rectangular and symmetrical: the bastioned forts differ greatly in shape, several being rectangular or approximately so, while Lympne is an irregular pentagon, and Pevensey somewhat oval.

These modifications in the bastioned forts had a twofold effect: they increased the passive resistance against attack by their greater strength of structure and the restriction of the entrances, and they increased the active resistance by providing means of enfilading both walls and gates. That they indicate a difference of period cannot be doubted.

The Wall forts had been reconstructed in stone by the time of Caracalla, and the bastioned forts of the Saxon shore are a legacy of a later time, when that shore was threatened by oversea enemies. According to the *Notitia*, both series were held by garrisons at the close of the fourth century, and the abundance of late coins found on their sites corroborates this, while the numerous alterations seen in the Wall forts bear witness to their long occupation at the time they were abandoned. The nature of some of these alterations is significant. The curtailment of gates by late masonry, converting double gates into single ones, and reducing the widths of some of the remaining entrances—and even the complete walling up of other gates—were apparently in response to the same conditions which gave the bastioned forts their limited gate accommodation, both in number and size.

Gellygaer and Cardiff, so near one another, well illustrate what has been said above.[1] The one presents a singularly perfect plan on the Hyginan model: the other was a bastioned fort. At Gellygaer there was no trace of alterations or other signs of a long occupancy, and its coins stopped short with Hadrian. Cardiff, although not mentioned in the *Notitia*, was apparently garrisoned to a late date, as the site yielded coins of Carausius, Constantine and Julian the Apostate.

[1] The above statements refer to Britain only. Many town and fortress walls in Italy of the period of the Republic and of Augustus have projecting towers or bastions, and in the east they were of common occurrence in earlier times.

Caerwent and Silchester stand somewhat apart. Their walls are of the form and massive construction of those of Cardiff and Burgh Castle, yet without bastions—those at Caerwent being subsequent additions. Instead of turrets of the type of Gellygaer and Housesteads, they have solid pilaster-like structures. In both, the ramparts were originally of earthwork only. The remaining gates at Caerwent are of the earlier type, but they are older than the wall. Those of Silchester are apparently coeval with the wall, and they are of intermediate character, two being double gates, and all being provided with flanking defences, but by a different method from those of the bastioned forts. Perhaps we shall not be far wrong if we assign the forts of the type of Gellygaer, Housesteads, and Birrens to the first and second centuries; the walls of Caerwent and Silchester, to the third; and the bastioned forts, to the fourth.

CHAPTER IV

FORTS

Their Internal Buildings and 'Suburbs'

OUR knowledge of the internal buildings of the *castella* is confined to those of the earlier or Hyginan class, as the exploration of the bastioned class has rarely gone beyond their defences. Sufficient has already been said about their general planning in Chapter II. to allow us to describe the different buildings or groups of buildings without further introduction. Comparison of the more complete plans of these forts proves that with comparatively few exceptions the buildings are resolvable into four types, of which the first three in the following summary nearly always occupied the middle zone of the fort, and the last, the remaining spaces on either side :—

(1) A rectangular building of remarkably constant plan on the side of the *via principalis* next the back of the fort. Its wide entrance faced the front gate, and opened into a porticoed courtyard. Behind this was a narrow space extending the full width of the building, and usually regarded as a second yard, and at the back of all was a row of offices, of which the middle one was the most important.

(2) Two or more strongly constructed oblong buildings, almost invariably with buttresses. They do not appear to have been divided into rooms, and their floors rested upon dwarf walls or pillars, the spaces between which communicated with openings in the side walls to allow of the circulation of air through them in order to keep the floors dry. These buildings occurred singly and in pairs, and were usually near the lateral gates of the fort.

(3) A house-like building—in several instances two—divided into a number of rooms, which sometimes surrounded a courtyard.

(4) A number of long, narrow buildings, usually divided into rooms, and symmetrically arranged across the *praetentura* and *retentura*; but sometimes they were arranged longitudinally instead.

Little can be gleaned from ancient writers and inscriptions as to the uses of these different buildings; but a consideration of their plans, their distribution compared with the tents of the Hyginan camp, and the varied needs of a garrison establishment, provide a reasonably satisfactory solution. The central building was certainly the headquarters; and almost equally certain the buttressed buildings were granaries. The house-like structures can scarcely be regarded otherwise than as the residences of the commandants and probably the chief officers of their staffs. Accommodation for the soldiers and their petty officers must have been provided, and as the long buildings both in form and distribution answer to the lines of tents in the Hyginan camp, there is little doubt that many of them were barracks.

These, however, neither exhaust the buildings of a fort nor the needs of a garrison. On all the more complete plans may be noticed other structures that cannot be classed with the foregoing. On the other hand, each fort was the scene of many necessary operations—the corn had to be ground and the daily food prepared, and there must have been repairing shops of various kinds, as smithies, armouries, joineries, and so forth. In cavalry forts, and those containing both infantry and cavalry, the stables must have been an important element; and perhaps in most of the infantry forts a few horses were kept for scouting purposes and dispatches—and horses imply the storage of fodder. Among the minor structures would be latrines, cisterns for the storage of water, ovens and other cooking arrangements, wells, drains, etc. Small baths have been found in some of the forts, but those for the use of the garrisons were almost invariably outside the walls.

THE HEADQUARTERS

This building is the 'forum' of some antiquaries, and the 'praetorium' of others. Each term has a certain appropriate-

ness. It is, on the one hand, forum-like in plan : on the other, it occupies the position of the *praetorium* in the camps of the classical writers, but it differs in not being the residence of the commander, nor, in fact, a residence at all. This, however, is not of much moment, as the praetorial space in the camps contained the tribunal, the altars, and the *auguratorium*, which would constitute it the headquarters. There is no evidence that the central building of the forts was anciently known as the 'praetorium.' There is fair evidence, however, that it was called the 'principia.' Three fragments of an inscribed tablet, found within the entrance of the central building at Rough Castle, recorded the erection of the *principia* by the Sixth Cohort of Nervians in the reign of Pius. Two other inscriptions have been found, the one at Lanchester [1] and the other at Bath, recording the restoration of ruined *principia*.

The headquarters at Chesters (Fig. 28) was one of the largest in Britain, and architecturally one of the finest ; and its remains have the advantage of being open to inspection. The courtyard was paved and had a marginal stone gutter with an outlet into a drain in the lower left-hand corner ; while in the opposite corner was a well. There were three porticoes, of which the lateral had square piers, while the passage-like front one was separated from the yard by a wall pierced with a large central opening and two smaller ones, all probably arched. Along the back of the courtyard stretched the front wall of the second division. It had five openings, all probably also arched, of which the end ones were smaller than the others and provided direct access from the porticoes. The space behind extended the full width of the building, and had a portico or aisle supported by four oblong piers, at each end of which was an external door. This space was paved like the yard, but, unlike it, had no marginal gutter. Along the back were five rooms. The opening of the middle room was certainly arched, and within were the steps into a vaulted chamber under the adjacent room on the left ; but neither the vault nor its access is part of the original structure. The openings of the adjacent rooms were probably also arched, while the end rooms were entered from these. That to the right of the middle room had a central square of flagged paving.

[1] *Roman Wall*, p. 348.

The corresponding building at Birrens[1] (Fig. 28) was smaller. The external walls were buttressed. The yard was paved and

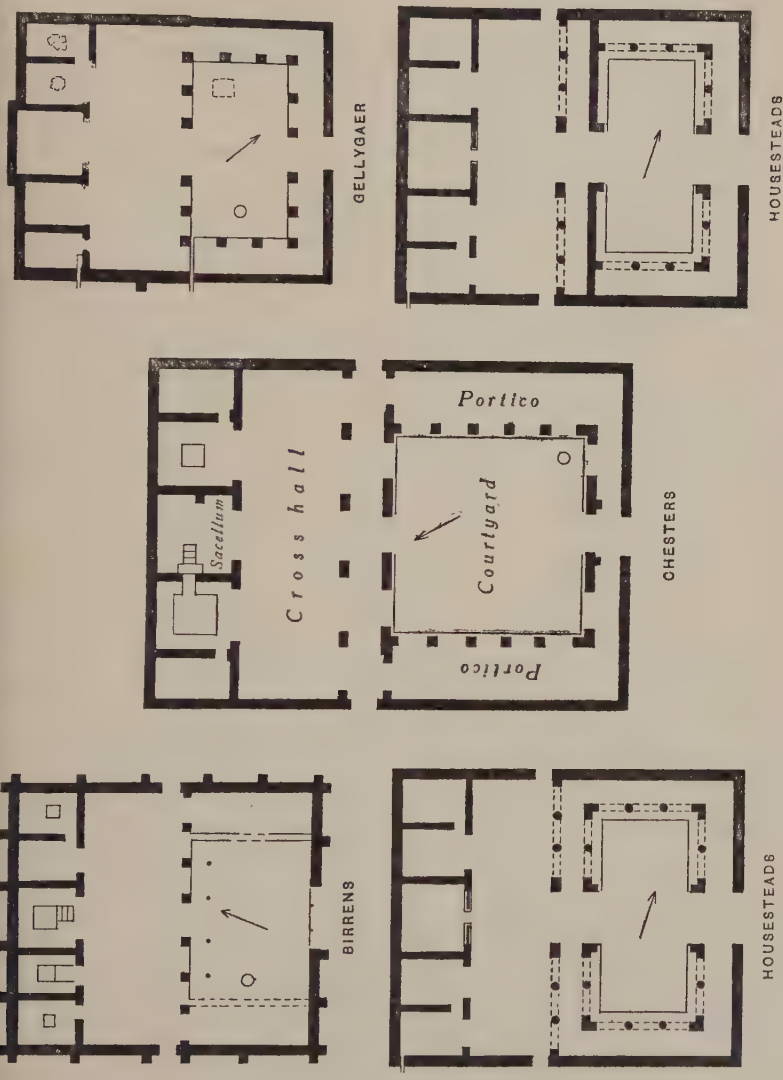


FIG. 28.—Plans of *Principia* or Headquarters. (50 ft. to 1 in.)

contained a well. On each side was a wall of secondary work which probably replaced a row of piers, thus converting the lateral

[1] *Soc. Antiquaries Scot.* XXX, p. 110.

porticoes into closed rooms. There are no signs of a front portico, and this probably explains the absence of a gutter on this side. But near the back of the yard were found four base-stones to receive the posts of a verandah, and as the gutter passed along the foot of the arcade between the two main divisions, it is almost certain that this verandah was a late introduction. The arcade was of seven arches, supported on square piers with moulded caps. The space behind was undivided, had external doors, and was roughly paved, but without marginal gutters. The five rooms resembled those of Chesters, except that the end one on the left was entered directly from the space in front. The middle room contained a sunk chamber lined with large slabs and entered by steps, and broken window-glass was found in it. The room to the left had a square shallow sinking in its floor, and the surrounding pavement was much worn; while each of the end rooms had a square void space in the paved floor.

The headquarters at Gellygaer[1] (Fig. 28) resembled the last, but was of simpler construction and not cumbered with late work. The yard was gravelled, with a well on the left, and on the opposite side an enigmatical pit, which appears to have been refilled without delay. On all four sides were the square foundations of the roof-supports. There were three porticoes of equal width, and they, as also the cross-space, had gravel floors kerbed off from the yard. The rain-water escaped by a drain in the upper left-hand corner of the latter. The five rooms at the back exactly resembled those at Birrens, but the middle one projected beyond the general line of the back of the building. The floors were of beaten earth, except that of the middle room, which may have been of timber. The end room on the left had a small sink which emptied into a drain passing through the side wall, and the two rooms at the right had central patches of flagstones, both discoloured by fire. The various roofs had been covered with red tiles; and it is worthy of notice that the outside wall of the first division is thinner than that of the second.

The remains of the headquarters at Housesteads[2] (Fig. 28), which are open to view, prove that the building underwent many alterations, and that the porticoes had been walled up as at Birrens. The earlier work has been so much interfered with,

[1] *Roman Fort of Gellygaer*, p. 51. [2] *Arch. Aeliana*, xxv, p. 208.

that the recovery of the original plan is difficult. Two plans are given, the second being that of Prof. Bosanquet, who excavated the site in 1898, and the first, that of the writer, who examined the remains several years later. The former resembles that of the Chesters headquarters, except that the second division is separated from the first by a wall with only a central opening. The latter shows this wall as the front of a portico, balancing that of the opposite portico, and the courtyard is shown as surrounded by a continuous portico of equal width throughout. There is no doubt that in the later period of the building, there was a wall as indicated by Prof. Bosanquet, but to the writer it seemed to have embedded in it the bases of piers corresponding with those of the opposite portico. The courtyard was paved, but the raised pavement of the ambulatory encroached upon it about 2 ft. 6 ins., thus carrying the stone gutter about 3 ft. in advance of the colonnades and showing that the portico roofs overhanged to that extent. This gutter was returned along the farther side of the courtyard at the same distance from Prof. Bosanquet's wall, showing that along that side there was also an overhanging roof.

Passing into the second division, the cross-space, which had a roughly patched pavement without a marginal gutter, and a door at each end, was, according to the one plan, undivided as at Gellygaer, and according to the other it had a portico or aisle as at Chesters. The five rooms at the back contain much late work, and the openings have been narrowed or entirely blocked; but it is easy to disentangle their original planning, and this closely resembles that of Birrens. The middle room is especially interesting. Its opening is about 12 ft. 6 ins. wide, and it was originally arched. The sill is of two long stones, and its upper surface, except for 4 ft. 7 ins. in the middle (where it forms a much worn step) has a shallow chase, 8 ins. wide, with a plinth moulding on the outer side, and this chase is continued up the face of the remaining jamb. These details are well seen in Fig. 30. There is no doubt that these chases held a wall or screen of stone or timber with a central opening of the width of the step. From the worn condition of the plinth it may be inferred that this structure was either low or of open-work, and that the wear was caused by the feet of those who stood in front and looked into the room. In Prof. Bosanquet's restora-

walk. Farther from the entrance was the inner courtyard (our 'cross-space'), on the west of which were situated the usual five chambers." Among the later alterations were the introduction of a vault or strong room beneath the middle room, and the construction of a great hall, about 154 by 50 ft., over the *via principalis* in front of the building, to serve probably as a drill hall. The chief feature of the scanty remains of the headquarters at Great Chesters [1] was the arched vault which closely resembled that of Chesters. At Brough,[2] the remains were even vaguer, but on or about the site of the middle room at the back was found a 'pit' of well-constructed masonry, 8 ft. long, 7 ft. wide at one end, and 5 ft. at the other, and 8 ft. deep, with a flight of stone steps on one side to the concrete floor. The steps, however, were not part of the original construction, and when they were inserted, a small square pit was cut through the floor apparently to collect any water that drained into the chamber, as the remains of a wooden bucket were found in it.

The headquarters at Rough Castle [3] were remarkable for their narrow form and unusual divisions, due to the narrowness of the fort. The plan is too imperfect to make out the details with certainty. The courtyard was small and was paved, and appears to have been flanked by two relatively wide porticoes. There were three rooms at the back of the building, and the middle one contained a small pit lined with flagstones, 4 ft. by 2 ft. 3 ins., and 2 ft. 6 ins. deep. The intervening space was apparently subdivided by a cross-wall with a central opening. The corresponding building at Camelon [4] contrasted with this in its great width, but its remains were very vague. The courtyard had two lateral porticoes of unusually great width, and the cross-space was long and narrow.

The reader will have observed that while the headquarters' buildings agreed in their general planning, they differed in their general proportions and in minor respects. The normal arrangement seems to have been a courtyard with three porticoes, and a second space with five rooms along the back. Several, however, had only lateral porticoes, and Housesteads possibly had porticoes on all four sides of its courtyard. At Hardknott and Melandra there were three rooms at the back, but the end rooms were long

[1] *Arch. Aeliana*, xxiv, p. 55.
[2] *Derbyshire Arch. and N. H. Soc.* xxvi, p. 186.
[3] *Soc. Antiq. Scot.* xxxix.
[4] *Ib.* xxxv, p. 364.

enough to have been subdivided; this, however, could not have been the case at Rough Castle. The space between the courtyard and these rooms—generally regarded as a second courtyard—was invariably narrow, varying from 13 ft. at Hardknott to 26 ft. at Chesters. At Gellygaer, Rough Castle, and probably at Melandra, Hardknott, Camelon, and Newstead, it was entered only from the courtyard and its porticoes; while at Chesters, Housesteads, Birrens, and High Rochester, lateral doors provided additional means of access. At Chesters, Housesteads (according to Prof. Bosanquet), and probably Rough Castle and Newstead, it had an aisle or portico next the courtyard.

The rooms at the back of these buildings were undoubtedly administrative. The middle one was the most important, and Housesteads supplies a hint how its open front was treated. That it was the *sacellum*—the place where "honours were paid to the standards which were exhibited within it, to the Genius of the regiment, and to the Imperial house[1] . . . the discipline and *esprit de corps* of the Roman army being closely bound up with the worship of the standards, and the worship of the emperor"—scarcely admits of a doubt.

It was also the treasury. We have observed that in many of our examples an underground cell or vault was provided, and that it was of late work. From this it would seem that in the declining days of the empire the growing lawlessness necessitated a stronger protection for the treasure (in earlier times probably kept in a strong chest) than that afforded by the sanctity of the spot. It is impossible to say what the remaining rooms were used for, but the recurrence of the same number in most of the forts implies that each had a customary and definite administrative purpose. Those next the *sacellum* had, like it, wide openings, but how these were treated is uncertain. The narrow doorways of the end rooms suggest some degree of privacy, and this is emphasized in those cases where the doorways opened into the contiguous rooms.

With regard to the general construction of these buildings, the first division involves no difficulty. The yard was open to

[1] In the vault under the *sacellum* at High Rochester was found among the débris an altar dedicated to the Genius of the Emperor and the standards—*Roman Wall*, p. 318; and an altar dedicated to the Discipline of the Emperor, found in the headquarters well at Birrens, probably came from the *sacellum*. See *Roman Era in Britain*, p. 131.

the sky, and the portico roofs sloped towards it, as is sufficiently proved by the marginal gutters. That the five offices at the back were roofed can hardly be questioned, but whether by a single longitudinal roof or several transverse ones, is uncertain. The broken window-glass in the *sacella* at Gellygaer and Birrens points to windows or skylights.

The ' cross-space,' as we have so far termed it—the ' querhof ' of the German antiquaries—is generally regarded as an inner yard, but there is reason to think that it was roofed, at least in our cold country, in which case ' cross-hall ' would be an appropriate designation. Its narrow width is suggestive that it was roofed ; and it will be recalled that while the front yard in our better preserved examples of these buildings was well paved or gravelled and had marginal gutters to carry away the rain-water, this space was less solidly floored and was not provided with gutters. It has been noticed in several instances, that the gutter was returned along the back of the yard, and this suggests the eave of a roof above. According to the current view, this roof at Chesters could only have been that of the portico of the inner yard. But a portico roof sloping away from its open side is contrary to experience, as the motive of such a structure is shelter, and a lofty front would unduly expose the covered walk to sun, rain, and wind. In Prof. Bosanquet's reconstruction of this portico at Housesteads the roof slopes to the inner court, thus rendering the gutter behind meaningless. The evidence of Gellygaer is still more emphatic. The row of piers or pillars along the back of the yard must have supported a roof, but as there was no inner line of piers as of a portico, the opposite edge of this roof must have rested on the front wall of the five rooms behind. Further, the greater thickness of the external wall of second division of the building tends to confirm this, as the roof of a cross-hall would be both heavier and loftier than those of the yard porticoes, and if the builders made any difference in the thickness of the external walls, they would naturally apportion it to the weight to be sustained. Birrens is equally to the point. The cross-space, like that of Gellygaer, had no inner portico or aisle ; yet the gutter along the foot of its arcade implies a roof, and a roof in this position could only have spanned the intervening space.

These headquarters' buildings bear too close a resemblance to

Fort.	Dimensions (English Feet).		Yard Porticoes.	Cross-Hall.		Administrative Rooms.	
				Aisle.	External doors.	Number.	'Strong-room.'
	Length.	Width.					
Chesters	125	86	3. Front narrow	Yes	Yes	5	Yes
Birrens	78	68	2. Lateral only	No	,,	,,	,,
High Rochester	78	73	3. Front narrow	,,?	,,?	,,	,,
Housesteads	90	76	3? 4? Equal width	?	,,	,,	No
South Shields	90??	79?	3. Front slightly narrower	No?	No	Space for 5	Yes
Gellygaer	80	78	3. Equal width	,,	,,	5	No
Hardknott	70	70	3. Front slightly narrower	,,	,,	3. Space for 5	,,
Melandra	73	72	Not traced	,,?	,,?	,,	,,
Great Chesters	?	78	,,	,,?	,,?	5?	Yes
Camelon	92	120	2. Lateral only. Wide?	,,	?	Space for 5	No
Brough	60?	85	Uncertain. Lateral only?	,,?	Yes?	,,	Yes
Rough Castle	75	43	2. Lateral only	Yes?	No	3	,,
Newstead	132	103	3? 4? Equal width	,,?	,,?	5	,,
Lyne	95	104	Uncertain	No	,,?	Space for 5	No
Bar Hill	83	77	2? Probably lateral only	,,	,,	3, possibly 5	,,
Castlecary	99?	85	Uncertain	?	,,?	2??	,,

a well-known type of forum group, of which those at Silchester and Caerwent are good examples, to be a mere coincidence. The cross-halls answer to their basilicas, and the rooms behind to their *curiae*, where justice was administered and public business transacted.[1]

GRANARIES OR STOREHOUSES

These were the strongest of the internal buildings, and their remains are usually the least obliterated (Fig. 31). At Gelly-gaer no other buildings were more encumbered with fallen débris, or showed more distinctly on the surface, indicating that they were not only strong, but lofty. In form they were oblong, and varied more in length than in width, the former ranging from 54 ft. at Hardknott to 130 ft. at Newstead, while the latter seldom exceeded the limits of 22 ft. and 25 ft. Their walls were rarely less than 3 ft. thick. They were single or double. Gelly-gaer and Newstead had two single blocks each, Birrens three, and on the plans of Camelon, Lyne, Rough Castle, Castlecary, one is shown in each; but as these plans are incomplete there may have been more. The same applies to Chesters and Corbridge,[2] where two stood side by side, but wholly unconnected and somewhat different, indicating probably

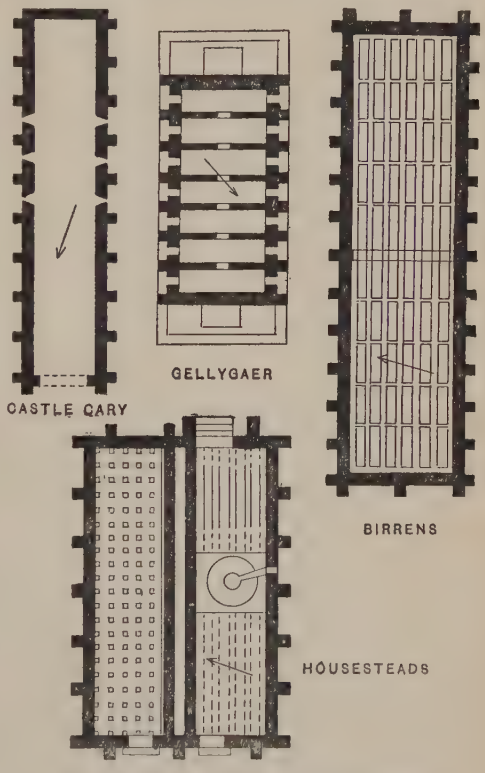


FIG. 31.—Plans of *Horrea* or Granaries. (50 ft. to 1 in.)

[1] See Figs. 64 and 65.

[2] *Arch. Aelian.* 3rd ser. v

a difference of age. High Rochester possessed two double blocks; and Housesteads and Hardknott one each. At Birrens the largest block had a transverse wall across the middle, and so may be regarded as a pair placed end to end.

Two other peculiarities distinguish these buildings—their provision for raised floors and lateral openings between the buttresses. The actual floors have disappeared except at Corbridge, but their supports remain to a greater or less degree. These were of two kinds, parallel dwarf walls and pillars. The former were the more usual. At Housesteads, Chesters, Newstead, Birrens, Bar Hill, Rough Castle, and Corbridge, they ran lengthways about their own width apart, thus dividing the space into a series of narrow channels, and in the last three they were interrupted at intervals to form a series of narrower cross-channels. At Hardknott, each had a single longitudinal dwarf wall, midway between the external walls. At Gellygaer, these walls were transverse, 6 ft. apart in the one building, and 9 ft. in the other, and all had central openings 3 ft. wide. At Lyne, they were also transverse, and apparently widely spaced, but too few remain to determine the width of the intervals. The pillared type occurs at Housesteads, South Shields, and Castlecary, the pillars of the first two being squared blocks of stone, and in the last, rough boulders.

The openings only remain where the external walls are sufficiently high to show them, and they appear to have risen from the ground-level. At Rough Castle, they were slits, 5 ins. wide externally and 9 ins. high; at Castlecary, 6 ins. wide, and remaining to a height of 3 ft.; and at Corbridge, nearly 2 ft. high and about 1 ft. wide, with a central stone mullion, the ends of which were let into the sill and the lintel. At Gellygaer, the openings were not splayed as in the foregoing, and were originally 3 ft. wide, with sills on the street-level, but were subsequently reduced to 2 ft. by the insertion of masonry cheeks. The original height is unknown, but this must have varied, as, owing to the general slope of the ground, the streets were on different levels. At Birdoswald, the buttressed wall of a granary at least 92 ft. long was discovered in 1859 near the south side of the fort, with narrow slits or loopholes between the buttresses.

At Corbridge alone, portions of the raised floor remained.

The flooring flags were large enough to span the intervals of the dwarf-walls, and were on the level of the lintels of the side openings, the channels between these walls being 2 ft. 7 ins. high in the one building and rather less than 2 ft. in the other. In all the other granaries, with the exception of those of Gellygaer and Hardknott, the intervals between the supports could similarly be spanned with flagstones, but the wider intervals at these two places would require timber beams to carry the floors. The basements at Gellygaer could hardly have been less than 3 ft. high. These hollow understructures were not hypocausts, as in no instance have stoke-holes or wall-flues been found in connexion with them; in fact, the lateral openings would render them useless as hypocausts. The presence of sooty earth at Camelon, and of charred wheat at Birrens, may indicate nothing more than that the buildings were destroyed by fire. The only feasible explanation is that their function was to keep the floors above dry by the free circulation of air through their spaces.[1]

The remains of the doors have been found in several of these buildings. Each component of the pair at Housesteads had, at the end farthest from the *via principalis*, a wide door reached by steps, of which the pivot-sockets and bolt-holes remain. The component containing the kiln (p. 104) had in addition a door next the street, but this was a late insertion, probably contemporary with the kiln. The doors at Gellygaer were obliterated, but their positions were indicated by the remains of porches, of which each building had one at each end. These structures appear to have been of timber, each erected upon a low platform of the width of the building, and edged with a built kerb covered with flagstones. The kerb of the longer side or front supported four posts, and the spaces between these were fenced or otherwise filled in, for the lateral kerbs alone were worn, showing that the porch was entered on those sides. Within each was found a loading platform built against the main fabric. At South Shields, also, no actual traces of doorways were found; but a row of pier foundations at one end of the double block may have related to a porch. At High Rochester and Castlecary the doors remained, and they opened upon the *via principalis*; and this was

[1] An inscription at Great Chesters records the restoration of a *horreum*, and on the site of one of the Corbridge buildings was found an alter dedicated by the *praepositus* of the *horreum*.

the position of the doors at Rough Castle and Lyne. At Chesters, Birrens, Hardknott, Camelon, and apparently Newstead, there were neither remains of doors nor indications as to their positions.

By thus piecing fact with fact we have reconstructed these buildings to the levels of their raised floors; we can do little more than conjecture what their superstructures were like. Their basements supply no evidence for divisional walls above them. It is probable that each building—or if of more than one storey, each storey—was a single spacious apartment. One reason for the buttresses is well seen at Gellygaer. As the original openings were wider than the intervening masonry, they would represent a line of weakness at the base. To ensure stability, the builders did what a modern architect would do—they strengthened the intervening wallings by buttresses. Whether these were continued up to the roof, pilaster-wise, or were sloped off at a lower level like a gothic buttress, is uncertain. But if the superstructure was of more than one storey, the lower storey would certainly have lateral openings if only for ventilation; and if of a single storey it is likely that this end would be attained in the same manner, rather than by openings in the roof. These openings would certainly be placed vertically over those of the basement, and in this case it would be constructionally necessary that the buttresses should be carried to the full height of the walls, and bear the weight of the main timbers of the roof. At Gellygaer, the roofs were covered with red tiles, and so would be of great weight. Probably they overhung to the full projection of the buttresses, and thus materially helped to keep the walls dry and to ward the rain off the openings. Whether these buildings were of more than one storey is not easily answered. If there were upper floors, these in the wider buildings would surely have required supporting pillars or posts; but the remains show as little evidence for them as for divisional walls, and no trace of external or internal stairs, by which such floors would be reached, has been found. In the absence of evidence to the contrary, it is safer to conclude that these buildings were of one storey, lofty, and open to their roofs.[1]

In the following table the first column gives the number of

[1] The east granary at Corbridge contained a row of pillars, and this suggests an upper floor; but the pillars did not form part of the original construction, and may have been introduced to support a defective roof.

Fort.	Number.	Dimensions (English Feet).		Occurrences.	Floor-Supports.	Lateral Openings.
		Length.	Width.			
Gellygaer	2	59	34	Isolated	Transverse Walls	Yes
Hardknott	2	53	24	Paired	Longitudinal Walls	Not found
South Shields	2?	75	21	,,	Pillars	,,
Housesteads	2	83	23	,,	Pillars in one; Longitudinal Walls in other	,,
Chesters	2?	50	32	Side by side	Longitudinal Walls	,,
		47	28			
High Rochester	4	77	20½	2 Pairs	?	Yes?
Birrens	4	71 & 75	24	Isolated	Longitudinal Walls	Not found
		120	32	End to end	,, ,,	,,
Newstead	2	124	34	Isolated	,, ,,	,,?
Camelon	1	106	20	,,	,, ,,	,,
Lyne	1	97	14	,,	Transverse Walls	,,
Castlecary	1	89	21	,,	Pillars	Yes
Rough Castle	1	72½	20½	,,	Longitudinal Walls	,,
Bar Hill	2	85	32	Paired	Longitudinal Walls in one; no supports in the other (?)	Not found
Corbridge	2	97	29	Side by side	Longitudinal Walls	Yes
		93	32			

granaries that have been *found* in each fort, and this in most cases certainly represents the actual number that the fort contained. The least certain in this respect is South Shields, which probably contained two pairs, as remains of a buttressed wall have been found on the other side of the head-quarters. The dimensions in the second column are external, but not including the buttresses.

OFFICIAL RESIDENCES

On every plan of a fort that shows the buildings about the head-quarters, there is one which vies with that structure in size, and sometimes is even larger. The planning is less stereotyped than those of the buildings already considered; but the distinguishing feature is ever the division into a number of rooms, which gives it a house-like character, and for this reason it is regarded as the commandant's residence; but it may also have included rooms for the chief members of his staff. On at least two of the plans, those of Housesteads and Birrens, two of these buildings can be distinguished—a smaller on the former behind the headquarters, and a larger on the latter on the opposite side of the *via principalis*.

The plan of the Gellygaer example (Fig. 32) [1] is easily made out, although the remains are scanty. The house was entered from the street, not directly, but through a corridor or portico extending along the front and open at the ends; and the door within this opened into a short passage which led to the corridor of a small courtyard, around which were the rooms. These were mostly long and narrow, and some of them may have been divided by partitions which have disappeared. Little further can be gleaned, except that the upper work was probably of timber, as very little stone débris was found on the site, while the sprinkling of red roofing-tiles and broken window-glass points to tiled roofs and glazed windows. The plan is that of a house of the so-called 'courtyard-type.' The corresponding building at Lyne [2] seems to have been similar, so far as can be judged from its scanty remains. The two Housesteads' examples [3] were also of the same type, and in each the rooms were numerous.

[1] *Roman Fort of Gellygaer*, p. 59. [2] *Soc. Antiquaries Scot.* xxxv, p. 180.
[3] *Arch. Aelian.* xxv, p. 239.

In the smaller and better preserved building (Fig. 32) the corridor passed along three sides of the courtyard, and had a short passage from the street, as at Gellygaer.

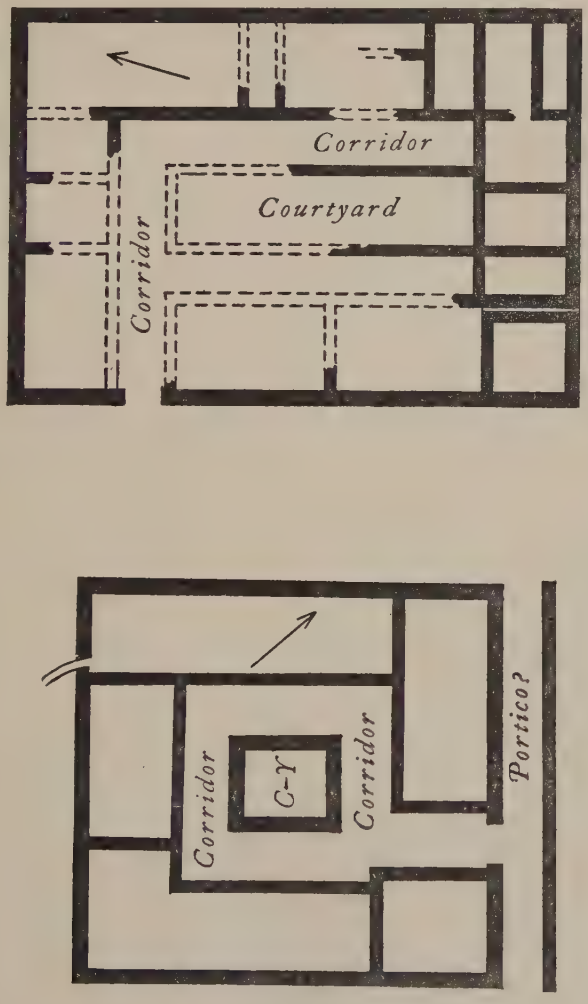


Fig. 32.—Plans of Commandant's Houses at Gellygaer and Housesteads. (30 ft. to 1 in.)

The smaller house at Birrens[1] was of different type. The plan shows a long passage intersecting it, the one end being the street entrance. This divides the building into two unequal

[1] *Soc. Antiq. Scot.* xxx, p. 112.

portions, which may have served different purposes. The larger block on the opposite side of the *via principalis* apparently had a small central courtyard, and the western group of rooms seems to have formed an independent set from the rest, but communicating with the presumed courtyard by an internal passage and small door. This block is balanced by the large double storehouse on the other side of the longitudinal street, and as the garrison included a detachment of horsemen, it is possible that both, in common with the other buildings of the *praetentura*, related to that detachment.

At Chesters, a number of rooms [1] between the headquarters and the east rampart have been opened out, but they extended farther to the north and south. So far as the plan goes, they appear to have belonged to two if not three blocks, of which that next the rampart has all the appearance of being a bath-house. In the same position at Great Chesters, a large house-like building [2] surrounded a paved courtyard, in which were found some socket-stones for posts, apparently the supports of a portico. Several of the rooms were heated by hypocausts, and a wing next the headquarters seems to have been baths. At the extreme left of the headquarters' range at Camelon [3] was a large building of the class we are considering, which, to judge from the small plan in the report, had a number of rooms arranged around three sides of the upper half of a courtyard, and in the lower half an undivided transverse apartment or space with an apse towards the rampart, and next the *via principalis* what may have been a large yard.

At Rough Castle, the whole space between the granary and the west rampart was occupied by a large rectangular structure,[4] but its remains were too obliterated to admit of an intelligible plan. It looks like an enclosed yard, with two strongly built little chambers in one corner at the back. But the variations in the paving and the remains of internal masonry, and still more a drain which passes round three sides of a central oblong space, suggest internal divisions and a central courtyard. The floors of the little chambers are on different levels, and the higher one is traversed by flues. Possibly these chambers formed part of a small suite of baths, and the rest of the space was a house.

[1] *Arch. Aeliana*, iii. (O.S.), p. 142. [2] *Ib.* xxiv, p. 56.
[3] *Soc. Antiquaries Scot.* xxxv, p. 363. [4] *Ib.* xxxix. p. 39.

At Newstead, the corresponding building, which has been recently opened out, was unusually large and symmetrical. It consisted of a range of rooms and a corridor surrounding a spacious courtyard. In this, and attached to the corridor on the side next the *via principalis*, was a little building containing three rooms, of which the middle one was the largest and terminated with an apse. Probably these rooms were baths.

It is evident that these buildings were not on any fixed and presumably military model, but followed the lines of Romano-British houses generally, and like them had sometimes a central courtyard, and sometimes not; while some, like most rural mansions, had private baths. Their remains do not appear to have been buried in a thick mass of fallen débris, from which we may infer that their superstructures were largely of timber.

BARRACKS

Of the large number of buildings in the forts which may conveniently be termed 'long buildings,' many were certainly the soldiers' quarters. We turn first to Gellygaer for elucidation, for the marked difference of six of its 'long buildings' from the rest promises some fruitful results.[1] The buildings referred to—four in the *praetentura* and two in the *retentura*—were somewhat L-shaped, and they ranged from 144 to 146 ft. in length, from 35 to 36 ft. across the 'head,' and about 30 ft. across the main limb (Fig. 33). In each, about two-thirds of the head was cut off by a cross-wall, and in one the space thus cut off was subdivided by a thinner partition. The exploration proved that in front of the set-back wall of the limb there had been a row of timber posts, the supports of a portico or verandah. The 'heads' were next the rampart, as also were the backs of the outermost of the four and of the two at the opposite end of the fort. The group of four were in two pairs, the fronts of which faced one another from opposite sides of an intervening street.

Chesters throws further light upon these L-shaped buildings. A pair of them, similarly placed *affronté* and with their 'heads' to the rampart, is partially uncovered; they are, however, more

[1] *Roman Fort of Gellygaer*, p. 65.

strongly constructed than at Gellygaer, and had stone columns instead of timber posts. But their most important feature is their division into a number of rooms by stone walls—the 'heads' into several of different sizes, and the limbs into series of equal size, with doors to the porticoes. The plans of these buildings, in Fig. 33, are completed by broken lines. The only

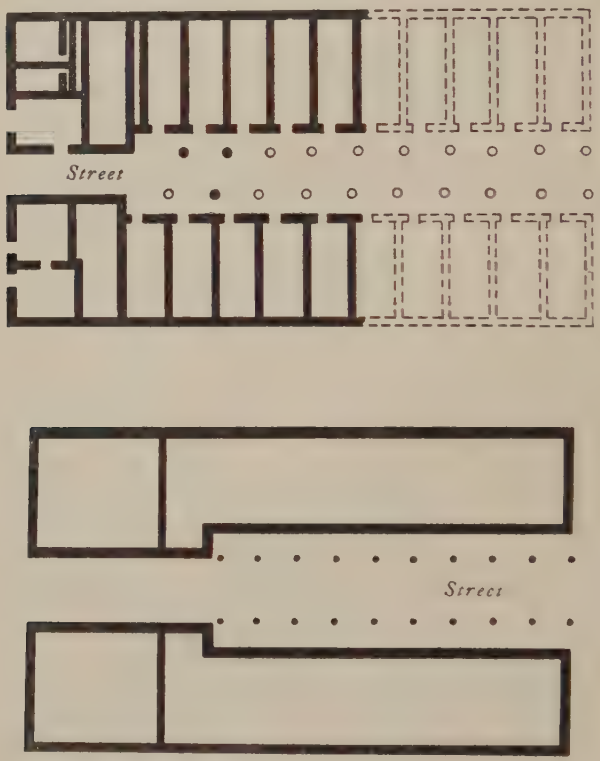


FIG. 33.—L-shaped Barrack-blocks at Chesters and Gellygaer. (50 ft. to 1 in.)

other forts in Britain in which they have been found are Camelon[1] and Newstead.[2] In the former, two of its three were paired as at Gellygaer, and the heads were also towards the rampart; but whether this fort contained more of these L-shaped buildings is uncertain. At Newstead, the long buildings recently uncovered in the *praetentura* are represented by rows of huts;

[1] *Soc. Antiquaries Scot.* xxxv, p. 362. [2] Interim Report, 1907.

but one row has a terminal longer hut which is next the rampart, and this gives it an L-shape. We may reasonably conclude from Chesters and Newstead that the corresponding buildings at Gellygaer and Camelon were divided into a series of rooms, only by timber partitions which have disappeared.

These buildings recall the arrangement of the tents in the Hyginan camp. There, to each century, which at the time consisted of eighty men, with a centurion and petty officers, was allotted a row of tents—ten for the men, and two, or a space equal to two, to the officers—the total length of the row being 120 ft. Usually two of these rows were placed face to face, with a space between, the whole forming a *striga*; while a single row constituted a *hemistrigium*. In our plan of the Chesters L-shaped buildings the limbs are divided into ten rooms each, while the heads, approximately equal to two of these rooms, are primarily divided by a cross-wall (corresponding with that in the single divided head at Gellygaer) into an inner single apartment, and an outer group, containing two rooms in the one case, and apparently three in the other. The Gellygaer buildings are susceptible of division into a similar number of rooms. We do not know how many of these L-shaped buildings there were at Chesters; but there were six at Gellygaer—two *strigae* and two *hemistrigia*—that is, one for each century of an ordinary cohort.

The barracks, however, were not usually L-shaped. At Housesteads there were thirteen simple 'long' buildings, and at Birrens a larger number. Of the former, Prof. Bosanquet[1] points out that two differed from the rest, the one being a buttressed enclosure, containing at one end a small suite of baths, and the other divided into three smithies; and to these may be added a third, in consequence of its isolation and internal peculiarities. The remaining ten buildings have a family likeness. Each was divided into a number of narrow apartments, but it is not easy to determine how many, as their plans are confused by alterations and rebuildings; but eleven or twelve can be distinguished in most, and these are sometimes subdivided by a cross-wall into two rooms each. The garrison was the First Cohort of Tungrians, one of those entitled *miliaria*, nominally a thousand strong, and consisting of ten centuries, requiring, of course, ten barracks.

[1] For his valuable observations on 'barracks' see *Arch. Aeliana*, xxv, p. 228.

Unfortunately, the plans of these buildings at Birrens are less perfect, but their larger number may be feasibly explained by the fact that the garrison—the Second Cohort of Tungrians—was not only *miliaria* but *equitata*, that is, it included a detachment of horsemen, for whose use stabling and other accessories would be required, in addition to barracks. It is probable that the largest of the three storehouses was for the storage of the horses' forage, and that the long buildings of the *praetentura*, in which it was situated, were the quarters of the cavalry and their horses.

The long buildings in the *praetentura* at Newstead were, as already stated, represented by rows of huts. Each row was about 190 ft. long, and contained eleven of these huts, all of similar size, with the exception above referred to, and averaging 35 by 15 ft. Their foundations were very slight, indicating that their superstructures were probably of timber. There were twelve of these rows, four of them single, or *hemistrigia*, and the rest paired, or *strigae*, the whole forming two groups, one on either side of the longitudinal street and the *hemistrigia* were outermost. The foundations of the long buildings in the *retentura* show that they were of the ordinary type, and most have no remains of cross-walls dividing them into rooms. The barrack accommodation thus was greater than that of Housesteads or Birrens, but it was a much larger fort, with presumably a larger garrison.

A number of L-shaped barracks have been brought to light on the site of the legionary fortress at Neuss on the Continent, the head-quarters of the Sixth Legion before its removal to Britain under Hadrian. "The normal barrack block at Neuss," to quote Prof. Bosanquet, "measures 240 by 80 ft., and consists of two long buildings face to face, separated by a road 16 ft. wide. Each building is in two parts. At the end nearest the rampart was a wing, 80 ft. long, divided into numerous rooms, in some of which we are inclined to recognize common kitchens and mess-rooms. The remainder, a strip 165 ft. long, is divided into twelve exactly similar compartments, each consisting of a front and a back room. Their front wall is considerably behind that of the 'mess-house wing,' leaving room for a verandah 9½ ft. wide." This division of the compartments into a front and a back room recalls the similar division at Housesteads, and

the compartments at Chesters being long and narrow are suggestive of a similar subdivision, probably by timber partitions.

The barracks appear to have been of a single storey, and as a rule of comparatively slight construction. At Ardoch, they were wholly of timber. At Gellygaer, they had stone foundations, but the small amount of débris on their sites led the explorers to consider that these foundations carried timber structures. The areas that would be occupied by them at Hardknott and Melandra have yielded no stone foundations, but in the latter fort, clay floors and oak posts have been found. Those at Chesters may have been of stone ; and Prof. Bosanquet considered that the final ones at Housesteads were also of stone, but were preceded by timber structures on stone foundations. No roofing-tiles have been reported as found on their sites, and from this may be inferred that they were covered with thatch or wood.

OTHER BUILDINGS AND STRUCTURES

On all the more complete plans of our Roman forts may be distinguished large and important buildings, which from their situations, internal divisions, and other peculiarities cannot be classed with any of those already described, and with few exceptions it is impossible at present to assign to them their uses. At Gellygaer, five of these ' other buildings,' of different shapes,[1] are readily distinguished, all adjacent to the central zone of principal buildings. One of these behind the commandant's house was divided into three large compartments, which, to judge from the objects found in them, were workshops. The irregular block, which balanced it on the other side of the longitudinal street, had probably a like use, as it lay at the back of a large enclosed yard, which yielded evidences of industrial pursuits. This yard was between the head-quarters and the storehouse on that side of the fort, and was entered by a wide gateway from the *via principalis*. Nothing was found in the three blocks along the opposite side of the *via principalis* to throw any light upon their uses.

It was mentioned above that two, if not three, of the long buildings at Housesteads differed from the normal barrack-blocks,

[1] *Roman Fort of Gellygaer*, pp. 67–71.

one being a buttressed enclosure with bathrooms at the end. At Birrens, there was a similar but larger buttressed enclosure on one side of the headquarters, and external to it along one side the remains of bathrooms, the whole forming a square block.[1] As already observed, the commandants' houses at Chesters, Camelon, Great Chesters, Newstead, and Rough Castle appear to have contained baths. There were two such houses at Housesteads and at Birrens, but without indications of baths. It is not unlikely, therefore, that in each of these forts these houses were served by a detached bathing establishment. At Ardoch, also, the remains of hypocausts and flues near the north gate may have related to detached baths.[2]

Of the arrangements for the preparation and cooking of the food of the garrisons we know practically nothing. At Birrens, the lower courses of a row of four oven-like structures,[3] blackened with charcoal, were found on the inner side of the rampart near the east gate. Each was about 5 ft. 6 ins. in diameter, with a paved floor, and a narrow opening to the *intervallum*. It was reasonably conjectured that they were the remains of ovens for the cooking of food. At Housesteads, one of the storehouses contains in the middle the remains of a similar circular chamber, with a narrow opening or flue through the south wall of the building; and the east guard-room of the south gateway contains another.[4] The opening of this is carried through the south wall into an external building, 27 ft. by 21 ft., erected against the guard-room. When first explored, there was evidence of a stone floor covered with cement above the 'kiln' in the guard-room, also hard by was an oven with a vaulted roof. All these remains at Housesteads appear to be late work, but there is no evidence that they are post-Roman, for at Birdoswald there were formerly the remains of two similar oven-like structures, about 4 ft. 4 ins. in diameter, one on each side of the south gate; and at Great Chesters a similar structure just within the rampart and close by the east guard-room was found in 1894, and there is evidence that a century or more ago there was a corresponding one outside the west guard-room.[5] A similar structure was found within the north-east corner at Haltwhistle. The Housesteads' examples

[1] *Soc. Antiquaries Scot.* xxx, p. 112.
[2] *Ib.* xxii, p. 449.
[3] *Ib.* xxx, p. 101.
[4] *Arch. Aeliana*, xxv, p. 236.
[5] *Ib.* xxiv, p. 37.

are generally regarded as kilns for drying wheat or malt, and certainly their deep form with sloping sides renders it unlikely that they were ovens.[1]

The construction of the roads or streets of the forts has nothing to distinguish it from that of Roman roads generally. At Housesteads, the surface of the streets was here and there the bare rock; elsewhere it was of masons' chippings on a rough pitched foundation, or a pavement of cobbles or flags on a basis of chippings At Birrens, one of the streets is described as a thick consolidated bed of gravel with a raised crown, retained by kerbs of large flat stones, while other streets were paved with cobbles on a bed of gravel. At Gellygaer, Camelon, and Rough Castle they were mostly of gravel on a bottoming of broken stone. At Cardiff Castle, the roadway through the north gateway was of iron *scoriae* on a bed of rough stones; and below this were two older roadways of the same construction.[2]

The drainage of the forts was well considered and carried out. At Gellygaer,[3] in spite of the ruinous condition of many of the drains, the general system could be ascertained. The ground falls to the south-south-east, and this determined the main lines of the drains. Two arteries were found, the one passing through the south-west gateway and debouching into the ditch there, but with a bend to avoid the bridge; the other traversing the whole length of the *via principalis* and similarly making its exit through the south-east gateway. The main drains were from 1 ft. 6 ins. to 1 ft. 10 ins. wide, and from 1 ft. 6 ins. to 2 ft. 4 ins. deep, and appear to have all been covered with large flagstones from 4 to 6 ins. below the surface of the roads. The sides were carefully built in regular courses, and the bottoms were paved or pitched or were the natural clay of the site. The smaller drains were, as a rule, similar; but one was neatly constructed of thin slabs set on edge and roofed with similar slabs. Along the sides of some of the streets the drain was simply the space between the kerb and the foundations of the adjacent buildings, but it is not clear whether these were covered or were open water-channels. These underground drains at Gellygaer may be accepted as generally representative of those of other forts. Small drains were occasionally V-shaped, the sides and tops being of flags.

[1] Probably most of these oven-like structures contained cauldrons or boilers.

[2] *Archaeologia*, lvii, p. 343.

[3] *Roman Fort of Gellygaer*, p. 30.

Several street water-channels or gutters were found at Birrens. The chief streets appear to have had one on either side, and the smaller a single one along the middle. These gutters took the form of rectangular channels about 9 ins. wide and 4 ins. deep, cut in long blocks of stone about 18 ins. wide, which in the chief streets were placed outside the kerbs. The outlet of one of these gutters remained. The water passed under a large flat stone on the road-level, which covered a hopper with built sides and a sloping bottom leading down to the drain.[1]

A plentiful supply of water for drinking and cleansing purposes was one of the first considerations. We have noted the presence of a well in some of the courtyards of the headquarters buildings.[2] But one or even several wells would hardly meet the varied demands for water, even in a small fort. For a more abundant supply, recourse was had to external springs or streams. At Great Chesters,[3] water was conveyed from Haltwhistle Burn by an aqueduct 5 miles long, in the form of a small canal, 3 or 4 ft. wide, cut in the sides of the intervening hills. At Bird-oswald,[4] the water of a spring several hundreds of yards distant was conveyed by a culvert constructed of large slabs of stone to a cistern near the centre of the fort. At South Shields and Chesters, inscribed slabs have been found recording the construction of aqueducts under the direction of Morius Valerianus and of Alpius Marcellus respectively.[5] This is specially interesting in the case of Chesters, as not only had that fort an unusually large well, but, close by, the North Tyne provided an inexhaustible supply of pure river-water.

Open cisterns or tanks have been found in several forts, notably at Housesteads, the largest of which, near the south-east corner, is nearly 15 by 10 ft., with sides 3 ft. high.[6] The sides are of ten large slabs of stone, kept in position by tongues of lead, and in addition by iron clamps on the top and iron stay-bars let into the cement floor below. A stone coping ran round the top, of which two lengths remain. As no trace of an inlet is to be seen, the supply may have poured over the top through a lead pipe. The surplus water escaped through a

[1] *Soc. Antiquaries Scot.* xxx, p. 117.
[2] Two were found at Birrens, one to supply the baths.
[3] *Roman Wall*, p. 234.
[4] *Ib.* p. 261; also 349.
[5] *Proc. Soc. Ant.* 2, xiv, p. 293; xvi, p. 387.
[6] *Arch. Aeliana*, xxv, p. 248.

notch at the west end, and was conveyed by a stone gutter to a latrine close by; and a hole for a tap or plug half-way down at this end provided an occasional means of more thoroughly flushing this latrine. There were at least four other smaller cisterns, of similar but simpler construction, in this fort. At Gellygaer, the remains of a large cistern, 20 ft. by 7 ft. 6 ins., were found, facing the head-quarters and attached to the end of a long building.[1] Sufficient of the sides remained to show that they had been built of tiles, and the bottom was of brick concrete, on a foundation of two layers of pitched stones, while external to all was a pugging of clay. At one end of the cistern was a lead outlet pipe to the adjacent drain. There was no indication how this cistern was supplied.

As one of the first aims of an enterprising enemy would be to cut off the external water-supply—and how easily could the five-mile aqueduct at Great Chesters, the whole length of which lay on the Caledonian side of the wall, have been thus rendered useless!—we can well imagine that at least one reliable well within the ramparts would be regarded as absolutely necessary. Apparently the normal position of a well was within the precincts of the headquarters, so that in times of stress its limited supply would be under direct official supervision and regulation.

Remains of latrines have been found at Housesteads, Castlecary, Gellygaer and Bar Hill. The latrine of the first of these[2] was erected against the south wall of the fort, near the cistern above described, and in a situation well adapted to receive the surface-water to flush it, the ground here sloping to the south. This building was 31 by 16 ft. internally, with a door at either end, but the eastern, which was blocked, was probably the original one. Along the two sides and the western end of the interior was a continuous trough, 3 ft. wide and 2 ft. 6 ins. deep, with a flagged bottom and built sides, the outer side being the wall of the building. The intervening floor was paved and had a marginal gutter. This gutter received the surplus water of the cistern, as described above; and its gentle fall from the south-east to its north-east extremity allowed every portion of it to be flushed, and the water finally poured into the trough at the latter extremity, where it also received the street drainage. Presumably the trough bottom sloped in a contrary direction,

[1] *Roman Fort of Gellygaer*, p. 69. [2] *Arch. Aeliana*, xxv, p. 249.

with an outlet through the fort wall at the south-east end. As the small baths, referred to on page 101, were due north, it is likely that their waste water also contributed to the necessary flush. "Above the trough, seats were doubtless arranged in the same way as at Uriconium, but there was no visible provision for the woodwork beyond a rebate formed on the top of the inner trough wall, which may have supported a sill-piece."

The latrine at Castlecary [1] occupied a similar position near the north-east corner of the fort, but was on a smaller scale, the internal dimensions being 16 by 12 ft. It was similarly built against the fort wall, and it had a single doorway at the west end. The flush appears to have been wholly derived from the neighbouring street drains, especially from one from the south. The latrine at Gellygaer [2] was within the enclosed yard, near its north corner, but it was in too ruinous a condition for its whole plan to be made out. The latrine at Bar Hill [3] was at the lower end of a narrow bath range extending from the south gate to the south-west angle of the fort, but the whole range was in an extremely ruinous condition.

'SUBURBAN' BUILDINGS

In Chapter II, some of the *castella* were described as having fortified enclosures or annexes attached to them, and incidental reference was made to external buildings, notably large baths. Unfortunately little is known of the 'suburbs' of the forts, but the indications of buildings in their vicinity is by no means uncommon. Housesteads is a notable example. To the south and east of this fort are the foundations of streets and buildings which a century or more ago were so conspicuous that old writers described the site as that of a city. Altars, statues, columns, and carved stones have been turned up from time to time, and they tell of temples (the remains of two of which are known), baths, and other goodly structures. There is no doubt that the suburbs of *Borcovicus* sheltered a considerable population. In the vicinity of other Wall forts may be discerned the indications of former occupancy. Hard by Chesters and Great Chesters

[1] *Soc. Antiquaries Scot.* xxxvii, p. 50.
[2] *Roman Fort of Gellygaer*, p. 71.
[3] *Roman Forts on the Bar Hill*, p. 44.

are the remains of baths, on a large scale, and similar remains may be seen or have been revealed by the spade close by the Roman forts at Camelon, Inchtuthill,[1] Rough Castle, Halton Chesters, Chester-le-Street, Binchester, Slack, Caerhûn[2] near Conway, Gellygaer, and Caersws, while at Lanchester, Plumpton, near Carlisle, Binchester, and Old Carlisle, are the remains of large buildings, which probably also were baths.

These large bath buildings were unquestionably for the use of the garrisons, and must be distinguished from the small baths within some of the forts. They were placed without the walls, probably on account of the large spaces they occupied; perhaps also for the convenience of the suburban inhabitants. The normal situation was within the annexe, when there was one: it was so at Camelon, Rough Castle and Gellygaer. Not every fort had an annexe. Not one has been reported along the line of the Wall of Hadrian. Lyne had two wing-like annexes, and Camelon also two, one larger than the *castellum* itself. Little as yet is known of the contents of these fortified enclosures. The *via principalis* at Camelon was continued through its larger annexe and was crossed by another street; and besides the baths there have been found within, the remains of another large building and traces of others. The present exploration of the Gellygaer annexe has proved that it was traversed by the *via principalis*, and besides the baths there was a large yard attached to them and containing remains of furnaces; while on the other side of the street have been found another large enclosure with a wing, and other structures.

In the suburbs of a fort should be expected the dwellings of the families of the soldiers, besides those of other civilians who served the garrison in various capacities, or who elected to live under the shadow of the stronghold. The religious needs of the community would be met by shrines and temples as at Housesteads. So far the excavations at Gellygaer have not revealed these various structures, and there does not appear to have been room for them in the annexe. Probably the spade will yet reveal traces of a civil settlement elsewhere.

[1] *Proc. Soc. Ant. Scot.* xxxvi, p. 224. [2] *Archaeologia*, xxvi, p. 127.

CHAPTER V

THE NORTHERN FRONTIERS

The Walls of Antoninus and Hadrian

FEW Roman remains in Europe have attracted more attention than these two lines of northern frontier defence. The lower and older, stretched across the island from the mouth of the Tyne to the Solway ; the upper, across the narrower isthmus between the indents of the Forth and the Clyde. The term *Wall*, however, does not give an adequate idea of these great works. Each was a complex of forts, continuous rampart with towers, military roads, and outlying posts, planned with consummate skill and on an imperial scale ; but, in addition, the southern wall has enigmatical features which have long been the subject of controversy. The literature of these barriers is voluminous, extending from Roman times to the present day, and includes some of the most important works on Roman archaeology that have been produced in this country. The widened interest which resulted from the successive editions of the late Dr. Collingwood Bruce's monumental work, *The Roman Wall*, in 1851, 1853, and 1867, shows no sign of abatement ; rather the reverse, to judge from the numerous explorations instituted by northern archaeological societies during the last dozen years.

Both lines appear to owe their inception to the military genius of Agricola. The strategic advantages of the northern isthmus were certainly recognized by him, for he held it by a series of military posts ; and it is probable that some of the forts upon or near the Solway-Tyne line are also due to him. His immediate successors lacked his energy, and during the period of border unrest which followed, the Caledonians made at least one serious inroad into the province. To remedy this dangerous

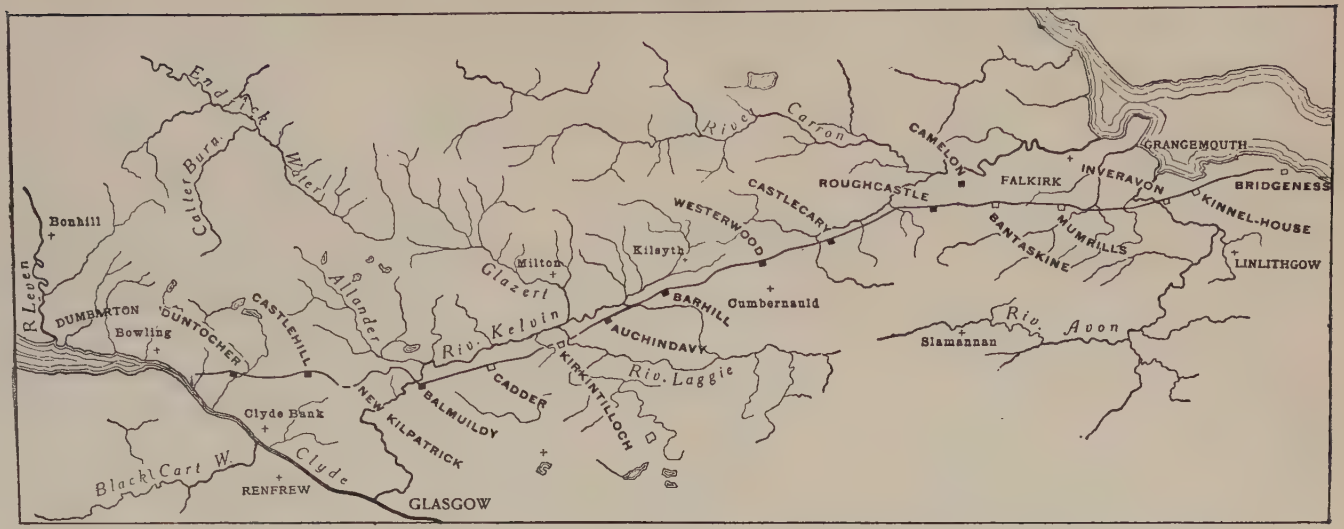


FIG. 34.—Map of the Antonine Wall. The known sites of forts are shown as solid squares; the uncertain or conjectural as hollow squares. (6 miles to 1 in.)

state of affairs, Hadrian appeared upon the scene in A.D. 119; and, in keeping with his general policy of consolidation rather than expansion, he constituted the lower isthmus the chief, if not the only, frontier. To this emperor, then, must be accorded the honour of the initiation of the magnificent barrier which crossed this isthmus, but, as will be seen later, it is uncertain how far the existing structures may be regarded as his.

It is probable that the Agricolan posts of the upper isthmus had already long been abandoned; but twenty-five years after Hadrian's visit, and in consequence of further border trouble, Lollius Urbicus, the legate of Antoninus Pius, fortified that isthmus with a 'wall.' This may have been the outcome of a return to the 'forward' policy of Agricola, in which case we may regard it as simply marking the first halt in a projected conquest of North Britain. On the other hand, it may have simply been intended as an additional security, the barrier serving, as Dr. Haverfield has suggested, as a 'breakwater' to mitigate the pressure of the Caledonians on the frontier proper. Or again, for reasons of policy, the Roman government may have placed the natives of the intervening country under a protectorate, with a view to forming a friendly buffer-state between the province and the Caledonians. Under any circumstance the barrier of the lower isthmus continued to be held, and in fact served as the base whence detachments were drafted to man the upper line.

This duplication of frontiers, however, was of short duration. Dr. Haverfield, in the *Antonine Wall Report*,[1] shows that history, inscriptions, and coins are alike silent as to "any general occupation of Scotland by Romans later than the reign of Marcus Aurelius"; and the late Mr. Thompson Watkin scarcely hesitated to date the evacuation of the northern wall from the great Caledonian inrush which took place in the first year of Aurelius' successor, Commodus, 180 A.D.[2] Mommsen was in favour of a longer occupation, but this was based upon the supposition that the barrier which Severus strengthened or rebuilt was the Antonine and not the Hadrian, a matter to which we shall revert later. On the other hand, the latter line continued to be the recognized frontier to the end of the Roman era; and in consequence of this, together with its greater length, complexity, and more massive

[1] Pp. 157–66. [2] *Roman Lancashire*, p. 14.

construction, it has ever attracted the lion's share of attention from students of this branch of Romano-British archaeology.

Various Roman and British writers, as Dio Cassius, Aelius Spartianus, Eutropius, Aurelius Victor, Orosius, Cassiodorus, Gildas, Nennius, and Bede, have referred to or have described these great frontier defences, but to give even an outline of their testimony would demand too much space. The statements of these writers are, as a rule, vague and confusing, evidently written from hearsay, and sometimes quite unintelligible; still, when carefully studied in conjunction with the archaeological evidence, and especially with the inscriptions, they supply much valuable information.

THE ANTONINE WALL

This 'wall' stretches from Old Kilpatric on the Clyde to Bridgeness, near Corriden, on the Forth, and the length of its gently sinuous course is about 36½ miles. For most of this distance its rampart and ditch are still visible; the former showing, where best preserved, as a broad and shallow convex mound, and the latter, as a more pronounced indent at a varying distance in front, that is, to the north. Less conspicuous is an irregular mound or glacis on the northern side or counterscarp of the ditch; and at a varying distance behind the rampart may be occasionally distinguished the military way. "The work is thus in its entirety a quadruple line, which, instinct with Roman greatness of design and thoroughness of execution, undulates across the isthmus with a course as direct as the strategic requirements of strength would admit. It skilfully takes advantage of high ground, commanding, throughout almost its entire course, a valley or low-lying ground in front. Occasionally it passes over ridges of a considerable elevation above the sea-level, as at Castlehill, Bar Hill, Croy Hill, and Westerwood. The three points last named stand close on the watershed of the isthmus—the Kelvin flowing westward, and the Bonny eastward, almost from their base. To the east of Westerwood the line of the vallum never reaches a height of 250 ft., but occupies a line of great natural strength, with the carses of the Forth lying in front of and at a considerable depth beneath it, until close on the terminal point at Bridgeness, where it sinks rapidly, to

end itself on the shores of the Forth." [1] Add to this 'quadruple line' the remains of a dozen or more stations for the accommodation of the garrison and the traces of 'periodic expansions' at the rear of the rampart, and the reader will have a general idea of the Antonine Wall. Each member will now be described in detail.

The Rampart or Wall.—This work was regarded by the older antiquaries as made of the upcast of the ditch; but the investigations of the Glasgow Archaeological Society, between the years 1890 and 1893, conclusively showed that the anterior mound or glacis alone accounts for all of it. The rampart was proved to be not ordinary earthwork at all. It is characterized throughout by the presence of thin dark seams dividing the earth into a series of courses. "The dark horizontal lines, in spite of numerous breaks and forks and blendings, preserve a remarkable parallelism. . . . At places they are so thick as to challenge comparison with the thickness of the intervening layer of other soil. At other places they are as often under as over half an inch in thickness. . . . The shades of colour vary considerably also: at some points they are black and bold, at others they are not black, but merely dark; at others, again, they are so faint and thin as to be hard to detect. Striking an average over the whole of the sections, it may be said that the distance between these strange lines is usually about three inches, and their general colour a mossy brown. But wider or closer, darker or lighter, thicker or thinner, there the lines are, not in one section, but in all." [2] The darkness of these lines is due to vegetable matter; and the conclusion which the excavators unhesitatingly arrived at, was, that the rampart was built of sods; in other words was turfwork, not earthwork.

That turf ramparts were frequently raised by the Roman engineers has already been noticed in these pages. That the Antonine rampart was of turf was known to Julius Capitolinus, who, writing about the close of the third century, relates how Antoninus Pius, through his general, Lollius Urbicus, conquered the Britons and built a *murus cespiticius*. And the Welsh and English chroniclers, Gildas, Nennius, and Bede, tell obscurely of a turf and a stone wall between the Picts and Scots of the north and the civilized population of the south, which may

[1] *Antonine Wall Report*, p. 2. [2] *Ib.* p. 123.

reasonably be identified with the two barriers considered in this chapter. The discovery of the Glasgow Society, therefore, is an instance of the confirmation of history by archaeology.

The rampart, as it now is, is rarely less than 32 ft. wide, or more than 4½ ft. high. Beneath it, and resting upon the old surface, is a spread of large rough stones, edged on either side with a row or kerb of squared stones, the width over all averaging between 14 and 15 ft. This constituted the foundation of the rampart; and it served also as a 'rumbling drain' to keep it dry, further provision in this respect taking the form of definite culverts here and there through it. This foundation determines the original width of the rampart, the present excess of which represents the spreading out of the turfwork by the combined action of its own weight, the disintegrating effects of the elements, and the operations of agriculture. The rampart appears to have been faced with clay, like those of Camelon, Ardoch, and Coelbren.[1]

Some interesting estimates of the original proportions of the rampart are given.[2] At Rough Castle, for instance, nineteen turf-courses remain, and it is estimated that the original thickness of the turves was 5 ins. Assuming that a few layers have disappeared, the original height of the rampart, independent of a parapet, would be not much over 10 ft. In another way the height can be gauged. In order to ensure stability, it would be necessary for the structure to have a decided batter, and a slope of 1 in 2½ of rise would be well within the limits of safety. With this slope, a wall 14 ft. at the base, would be reduced to 6 ft. at a height of 10 ft., and this, with a breastwork of wood, would afford sufficient space to comply with the Vitruvian canon that a rampart-walk should be wide enough to allow of two men passing one another.

The Ditch.—In its normal form, that is, where it is cut in the ordinary soil of the district, the ditch is V-shaped, having a width of about 40 ft., and depth of 12 ft. The chief exception to these dimensions occurs along the foot of Croy Hill, where the masses of rock interfered with its regular formation. Here the sides are much steeper, and the average width is 20 ft. The ditch, it may be remarked, was a dry one, as usual in Roman work.[3]

[1] *Ib.* pp. 76, 83. [2] *Ib.* p. 128. [3] *Ib.* p. 127.

The Berm.—Between the ditch and the rampart is a strip of natural surface, normally from 24 to 30 ft. wide, but sometimes narrower or considerably wider. In its great width, the berm (if it is permissible to apply the term to so wide a space) contrasts with those of the stations, but it is comparable with that of the barrier of the lower isthmus. One suggested explanation for so wide a berm is the position of the rampart and the nature of the soil. The former is almost invariably on ground which slopes to the north, consequently the drainage is in that direction ; and this combined with the sandy nature of the upper soil would "tend to render the scarp unstable and make the erection of a high rampart near the edge of the ditch a matter of great risk." Arising from these is a strategic reason. It is contended that "the top of the wall was in line with the angle of the scarp of the fosse, so as to have the bottom of the ditch fully in view and under the fire of the soldiers on the wall without their unduly exposing themselves. Without a berm this would not have been so ; the bottom of the ditch would not have been under effective fire from the top of the vallum at all ; in other words, the bottom of the ditch would have been what in military language is termed 'dead.' By setting the wall some distance back from the ditch this disadvantage would be obviated, whilst, at the same time, the perfect stability of the structure would be ensured." [1] The theory is ingenious, and it seems to explain in a general way the correlation of the rampart, berm, and ditch ; but its weak point is why the forts along its line should have narrow berms, as appears to be the case.

The Glacis.—This outer mound has little in common with the modern glacis except in its position. It consists, as already stated, of the upcast from the ditch ; and is very irregular in form. "Yet even in this seeming irregularity there is, roughly speaking, a rule. There are in the main two shapes, the flat and the heaped-up, and the adoption of these respectively appears to a considerable extent to have been governed by the nature of the levels of the ground at the various points." [2] Briefly, where the opposite faces of the ditch are of about the same height, the former type prevails ; and where the outer, or northern, is lower than the inner, the latter prevails ; but nowhere does the glacis appear to have been so high as to have afforded shelter

[1] *Antonine Wall Report*, p. 132. [2] *Ib.* p. 138.

to the enemy, or to have interfered with the 'command' of the rampart.

'*Periodic Expansions.*'—Here and there along the line are projections from the inner or south side of the rampart, which, for want of a better name, are termed 'periodic expansions.' Little is known of them or of their distribution. In their present condition they appear as roughly rounded bulges, which gently slope off, like the rampart itself, to the surrounding level. Two have been cut through on Croy Hill,[1] and both were found to be of turfwork, but of separate construction from the rampart. One of these projects some 38 ft. and is about 60 ft. in width; and the other is somewha longer and narrower. These are, of course, their dimensions in their present spread-out conditions; what their original shape and sizes were, can only be conjectured at present. The Croy-Hill examples are 80 ft. apart, but there is no evidence that this represents the normal or even usual distance between the 'expansions' generally. The remains are so slight, as a rule, that it is almost certain that the sites of many are quite unknown, and for this reason it would be idle to speculate whether their periodicity had the approximate regularity of the mile-castles of the lower barrier.

The use of these projecting masses has not been satisfactorily solved. In Gibson's edition of Camden's *Britannia* they are described as "Watch towers within a call of one another, where Centinels kept watch day and night." The *Antonine Wall Report* admits the possibility that "they may have formed the basis for wooden turrets used as watch-towers or sentry-boxes"; also that "they may have been 'ramps' or steps to mount the wall from the south side answering to the 'double ascents' of Hyginus." But greater stress is laid upon the theory that they served as the bases or solid platforms for artillery, and in support of this, the finding of stone projectiles along the line of the fortification is cited.[2]

The Stations.—The garrisons were stationed at intervals along the line in forts or *castella*, of which the sites of ten are known and those of six or seven more are surmised. The known sites, starting from the east, are Rough Castle, Castlecary, Westerwood, Bar Hill, Auchindavy, Kirkintilloch, Balmuildy, New Kilpatrick, Castlehill, and Duntocher. These are on the actual

[1] *Ib.* pp. 71 and 80. [2] *Ib.* p. 148.

line; but a little north of it, near Rough Castle, is the fort at Camelon, which may be regarded as an advanced post. Between the Forth and Rough Castle, 10½ miles, the stations have not been determined, but it is conjectured that they occurred at Bridgeness, the eastern terminus of the Wall, Kinnel, Inveravon, Mumrills, and Bantaskine. It is also conjectured that there was one midway between Kirkintilloch and Balmuildy, at Cadder; and another at Chapelhill at the western end of the Wall. Assuming that these conjectural allocations are correct, the stations were more closely placed than those along the Wall of Hadrian, the shortest interval being about 1¾ miles, and the longest, between Rough Castle and Castlecary, 3¾ miles. With the exception of Castlecary, Rough Castle and the fort on Bar Hill, which have been explored with the good results already described, little is known of these stations, as their visible remains are very obscure. Dressed stones are found about the sites of several, from which we may infer that, like Castlecary, they were stone forts or at all events contained stone buildings. Normally, they were applied, like the mile-castles of the lower isthmus, to the Wall, its rampart forming their northern defence; but one at least, Bar Hill, and probably also Castlehill, were slightly set back from its line.

THE WALL OF HADRIAN

This grand barrier extends from Bowness on the Solway to Wallsend on the Tyne, and is 73½ miles in length, or almost double that of the Antonine line, with which it has points both of resemblance and difference. Like it, it has a similar succession of ditch with glacis-like outer mound, wall set back so as to leave an intervening berm-like space, and military road behind; also, at intervals, fortified stations for the garrisons. But, unlike it, the wall is built of stone; and the stations are in two series, one of greater, and the other of lesser size, which may be distinguished respectively as *Forts* and *Mile-castles*. The most striking point of difference, however, is a line of ditch and earth-mounds in the rear of the military road, known as the *Vallum*. This has no counterpart in the Antonine barrier, and is a most puzzling feature. The lower barrier thus resolves itself into two sets of works: the Wall with its appendages, and the Vallum.

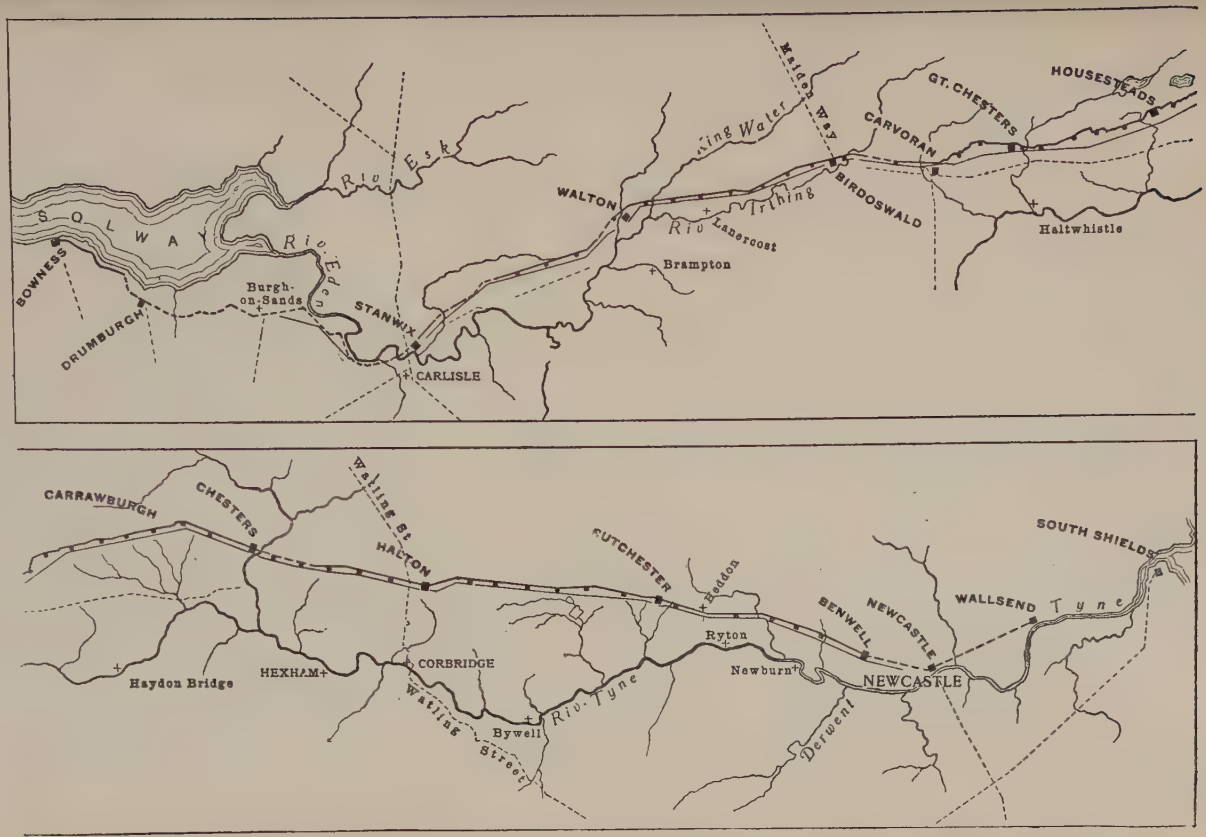


FIG. 35.—Map of the Wall of Hadrian. The Wall shown as a thick line; the Vallum as a thin line; the Forts as large black squares; and the Mile-Castles as small squares. (6 miles to 1 in.)

These two lines pass from sea to sea in close companionship as a rule, running parallel some 60 or 80 yds. apart for miles on the stretch, along the more gently undulating lands of the eastern and western thirds of their course. But in the intervening rugged limestone region between Thirlwall and Sewingshields, this parallelism disappears, and the two lines seem at first sight to pursue independent courses, drifting apart here and there to the extent of half a mile or more. Yet it is here more than elsewhere that they bear the impress of a common design and scheme.

These divergencies in the middle third of their course are due to the configuration of the country. The Vallum pursues the more direct course—"a flexible line composed of straight pieces," as Dr. Haverfield aptly expresses it; while the Wall does not hesitate to leave its companion for the higher grounds. In this rugged region, where the hills have gentle dip-slopes to the south and craggy precipices to the north, the normal position of the latter is the crest; that of the former, the slope behind. Of the Wall, Dr. Bruce thus wrote: "Shooting over the country, in its onward course, it only swerves from a straight line to take in its route the boldest elevations. . . . But if the murus never moves from a right line, except to occupy the highest points, it never fails to seize them as they occur, no matter how often it is compelled, with this view, to change its direction. It never bends in a curve, but always at an angle. Hence, along the craggy precipices between Sewingshields and Thirlwall, it is obliged to pursue a remarkably zigzag course; for it takes in its range, with the utmost pertinacity, every projecting rock. This mode of proceeding involves another peculiarity. The Wall is compelled to accommodate itself to the depressions of the mountainous region over which it passes. Without flinching, it sinks into the 'gap' or pass, which ever and anon occurs, and, having crossed the narrow valley, ascends as unfalteringly the steep acclivity on the other side." [1]

Between these great works, the Wall and the Vallum, the military road in the more hilly regions pursues a path which is parallel to neither, but which has been determined with a view to the easiest route from point to point.

The Wall.—As already stated, the Wall was of stone. Where

[1] *Roman Wall*, 1867, p. 51.

best preserved it remains to the height of 5 or 6 ft., and in one instance of 8 ft.; but in those districts where the land has been long under cultivation, it is more often reduced to a mere ridge of foundation rubble, or has so completely disappeared that only the ditch remains to indicate its line. Where ascertainable, the thickness varies from 6 to 9½ ft. What the original height was, can only be guessed. Sundry writers, from Bede to Camden, name 12 to 21 ft. for well-preserved portions in their times. It is probable that the last is an exaggeration, and that Dr. Bruce's conjecture of from 18 to 19 ft. is not far from the truth.

The Wall was faced front and back with well-squared stones selected with great care. The construction is not uniform. In most places the facings appear to have been built in stages of two or more courses, the intervening rubble being consolidated by grout. Less frequently the Wall was raised course by course, each being topped with a layer of trowel-laid mortar. Bonding

Fig. 36.—The Wall of Hadrian. A, Ditch; B, Wall: C, Military Road; D, The Vallum.

tiles, the courses of which are so characteristic of Roman masonry in the south-east of England, are not used, as the abundance of large-sized building stones rendered them unnecessary. "On wavy ground the courses of the wall follow the undulations of the surface, but on steep inclines the stones are laid parallel to the horizon" (Bruce).

The Ditch.—This accompanies the Wall throughout its whole length, except where it would be of little practical use, as along the edges of the cliffs and for a mile or two west of Carlisle, where the Eden takes its place. "No small amount of labour has been expended on the excavation of the ditch; it has been drawn indifferently through alluvial soil and rocks of sandstone, limestone, and basalt. . . . The fosse never leaves the wall to avoid a mechanical difficulty."[1] Its dimensions vary considerably. In some places it attains a width of 40 ft.; but Hutton's

[1] *Ib.* p. 55.

estimate of the average width as 36 ft., and depth as 15 ft., may be accepted as approximately correct. Wherever it has been examined, it has a flat bottom with sloping sides; and the upcast, like that of the ditch of the Antonine Wall, was used to form a glacis-like mound or spread.

Stations.—Along the actual line or in its vicinity are the remains of the stations which accommodated the garrisons. Of these, about nineteen are known, some still imposing though in ruins, others reduced to the barest traces. Their distances apart range from 2 to 7 miles, but most fall within the limits of 3 and 5. Their plans, so far as they are known or can be inferred, are those of typical Roman forts. Some, including the three or more detached stations, were apparently constructed, not only before the Wall, but before it was contemplated, and were subsequently woven into the mural scheme. The majority, however, were undoubtedly part of the scheme, although not necessarily built at the same time as the other works. It is reasonable to think that the first step would be to secure a safe retreat for the builders, and the easiest way to accomplish this would be to first provide the stations.

So far as we know, they were all 'stone' forts. They differed in size: Drumburgh, the smallest, having an area of ¾ acre; Birdoswald, the largest, 5½ acres. They differed in shape: Wallsend, of which few traces remain, was a square; Great Chesters, a short oblong; Housesteads, an elongated oblong; and Halton, an oblong with a rectangular projection or 'annexe.' They differed in their relation to the Wall. There were the detached forts lying to the south, as Chesterholm and Carvoran; those which simply came up to it, one end or side continuing its line, as Great Chesters, Birdoswald, and Carrawburgh; and those which straddled across it and projected into the space beyond, as Chesters, Rutchester, and Halton. The gates were usually four; but two at least of the larger forts—Chesters and Birdoswald—had six. In those which were on the actual line of the Wall, one of these gates opened into the extra-mural space, the only known exception being Chesters, with three. In their direction the stations fall into two series—those in which the axis or 'length' is parallel to the Wall, as in Great Chesters and Housesteads, and those—the majority—in which it is transverse to it, as in Chesters and Birdoswald. In other

FIG. 37. THE WALL OF HADRIAN AT CUDDY'S CRAG

words, the direction of the one series is approximately east and west; that of the other, north and south. So far as we know, the former had their fronts towards the east; the latter, towards the north.

Mile-Castles.—These differed from the stations in several important particulars. They were smaller, more numerous, and distributed at tolerably even distances. The sites of about fifty have been identified, but their remains are for the most part extremely slight, consisting of mere rises in the ground or variations in the herbage; and in a few instances all visible traces have disappeared during the last century. In the wilder middle region, on the other hand, some are still conspicuous, three in particular, one near Housesteads, one at Castle Nick, and one at Cawfields;[1] and these, together with one at Poltross, have been excavated with good results.

These fortlets were all of oblong form, averaging 60 ft. by 70 ft. They were attached to the Wall, and the remaining three sides were of similar thickness and workmanship, and bonded into it. The free angles were boldly rounded off. In the centre of the north and south sides were gates of single openings, as described on page 65, and through these passed the single street. At Poltross,[2] there was on each side of the street an oblong building, 16 ft. wide and between 50 and 60 ft. long, with four doors, indicating as many rooms. These buildings were separated by a narrow interval from the side walls of the Mile-Castle, but were set back from the Wall, 8 ft., and this interval contained an oven and the steps to the rampart-walk. The excavation of the Housesteads example revealed two floors with an intervening layer of rubbish derived from the partial destruction of the main fabric during a successful inroad of the barbarians. The lower of these had resting upon it much charcoal and other vestiges of a conflagration, derived probably from timber structures built against the walls. Upon the upper floor were the remains of a second series of buildings similarly placed. At Castle Nicks the foundations of similar buildings were found, but independent of the main walls and rudely constructed.

The distribution of the mile-castles is a point of great interest. Maclauchlan's maps show the sites of fifty-two; but these do not

[1] *Roman Wall*, pp. 202, 225, 230. [2] *per* Mr. F. G. Simpson.

represent the original number. West of Wallhead none are shown, the sites along this portion of the line being uncertain; but eastwards of that point the chain is tolerably complete. Along the less hilly portions of the latter, that is, between Wallsend and Sewingshields, and between Thirlwall Castle and Wallhead, the fortlets recur, as a rule, after intervals of a trifle less than a mile, the exceptional intervals being twice or thrice the length, from which we may reasonably infer the former existence of intervening fortlets. The average length of the shorter intervals (of which there are twenty-six) is 1625.8 yds., or only 7 or 8 yds. in excess of the usual estimate of the Roman mile, hence the designation of these structures, 'mile-castles,' is well-chosen. In the more hilly regions they are less regularly spaced, occasionally being much nearer one another than a Roman mile, the engineers evidently relaxing their rule in order to select the most advantageous positions near the theoretical points, as at the passage of a river, valley, or road. The stations appear to have been quite disregarded. Housesteads, for instance, does not affect the chain of mile-castles in its vicinity, being in one of the mile intervals. The original number of these structures was about eighty.

Turrets.—There is reason to think that these structures were numerous, but the remains of few are known. Even in Horsley's time, "scarce three of them could be made out in succession"; and, sixty years later, Hutton inquired in vain for them. But during the last half century or more, three—at East Brunton, Black-Carts, and Mucklebank, near Walltown—have been excavated, and others have been described. They appear to have been unequally distributed, and to have been placed where look-outs were required. To judge from the few which have been examined, they were, like the mile-castles, part and parcel of the structure of the Wall—small rectangular buildings, with an internal area of about 12 by 10 ft., recessed into its inner side, the remaining three sides being about 3 ft. thick, with a narrow doorway to the south.

The excavation of the Mucklebank turret by Mr. J. P. Gibson in 1892 not only threw much light on these obscure structures, but bore further witness to the vicissitudes through which the Wall passed. A succession of three ground floors, with intervening fallen débris and charcoal, pointed to two epochs of disaster. The lowest floor was of beaten clay, hardened by fire or mixed

with ground brick; the second and third were flagged. Embedded in the débris above the third floor were heavy slabs of freestone, which Mr. Gibson attributed "to the floor of an upper chamber or possibly, the continuation of the path along the top of the great wall over or through the turret." These slabs, he suggested, had been supported on wooden joists; and from the large iron nails found about them, he concluded "that a great portion of the upper part of the turret must have been constructed of wood." No trace of an external or an internal stair was found, so that the upper floor was probably reached by a ladder in the lower chamber.[1]

The Mural Road.—The function of this road was to provide a means of communication between the stations and mile-castles. Its ridge is best preserved in the hilly districts; elsewhere it is mostly obliterated or buried, but here and there its remains have been disclosed by the spade.[2] Its usual position seems to be from 60 to 100 ft. to the south of the Wall; but here and there it recedes, especially where the surface is uneven, in order to gain gentle gradients. Its contact with the stations is not always clear. At Carrawburgh, which is a north-and-south fort, it apparently entered by the lateral gates, and so coincided with the *via principalis*. At Chesters, however, it could not have entered by these gates, as they were immediately north of the Wall; so that if it threaded the station, it must have passed through the subsidiary east and west gates. At Housesteads and Great Chesters, two east-and-west stations, the road is usually shown on plans as passing through their end gates.

In serving the stations and mile-castles the road necessarily clung to the Wall, and thus more or less participated in its sinuosities. Hence in the hilly region, where the Wall zigzagged and swung considerably to the north, it would be neither a direct nor an easy means of communication between distant points. To provide a 'through' route from lowland to lowland, the road now known as the Stane Gate was constructed. It left the Wall in the neighbourhood of Chesters, and regained it west of Carvoran, its more direct course compared with the circuitous sweep of the former, likening it to the string of a bow.

[1] *Arch. Aeliana*, xxiv, p. 13.

[2] For the peculiar construction of this road, see *Roman Era in Britain*, Chap. ii.

The Vallum.—This great earthwork consists of a broad ditch, with its upcast disposed to form a series of mounds running parallel to it, two larger set back from the sides of the ditch, and a smaller, cresting one of the brinks—the south brink, according to the books—but not always present, or at all events not always noticeable. Here and there the Vallum is an imposing object, vying with the Wall itself in conspicuousness. In several places it has been cut through of late years, notably at Heddon-on-the-Hill and Downhill, near Halton, by the Newcastle Society of Antiquaries;[1] and at Appletree, near Birdoswald, Bleatarn, near Crosby-in-Eden, and Brunstock, near Carlisle, by the Cumberland and Westmorland Society.[2] A comparison of the sections disclosed by these cuttings with the surface-indications generally shows that its form and dimensions varied little. The ditch was flat-bottomed like that of the Wall, only smaller, being about 30 ft. in width across the top, from 10 to 12 ft. across the bottom, and about 7 ft. deep. The larger mounds vary considerably in width and height in their present condition, due undoubtedly to their unequal 'spread' since Roman times; and to this cause must, in some degree at least, be assigned their varying distance from the ditch. Where best preserved they are still 6 or 7 ft. in height. Their average width is about 30 ft. and distance from the ditch about 25 ft., the total width of the whole work averaging 130 ft. From its intermittent character it has been supposed that the small marginal mound is not part of the original scheme. It seems to the writer, however, that its purpose was to bring the sides of the ditch to a common height. Where the ditch is cut through approximately level ground, it is not seen; where the ground sinks to one side, there it is most conspicuous; and as the slope is generally to the south, this explains the prevailing view that it is confined to that side. Mr. Gibson confirmed this surmise, stating that where the ground falls to the north, the marginal mound is on that side, "showing that it was always made on the lower side of the ditch, to level it up to the opposite side."

The behaviour of the Vallum to the stations has an important bearing on the question of its origin and use. It has long been

[1] *Arch. Aeliana*, N.S. xvi.

[2] *Cumb. and West. Arch. Soc.*, 1895, p. 456; 1896, p. 191; 1897, p. 415; 1898, p. 174; 1899, p. 351.

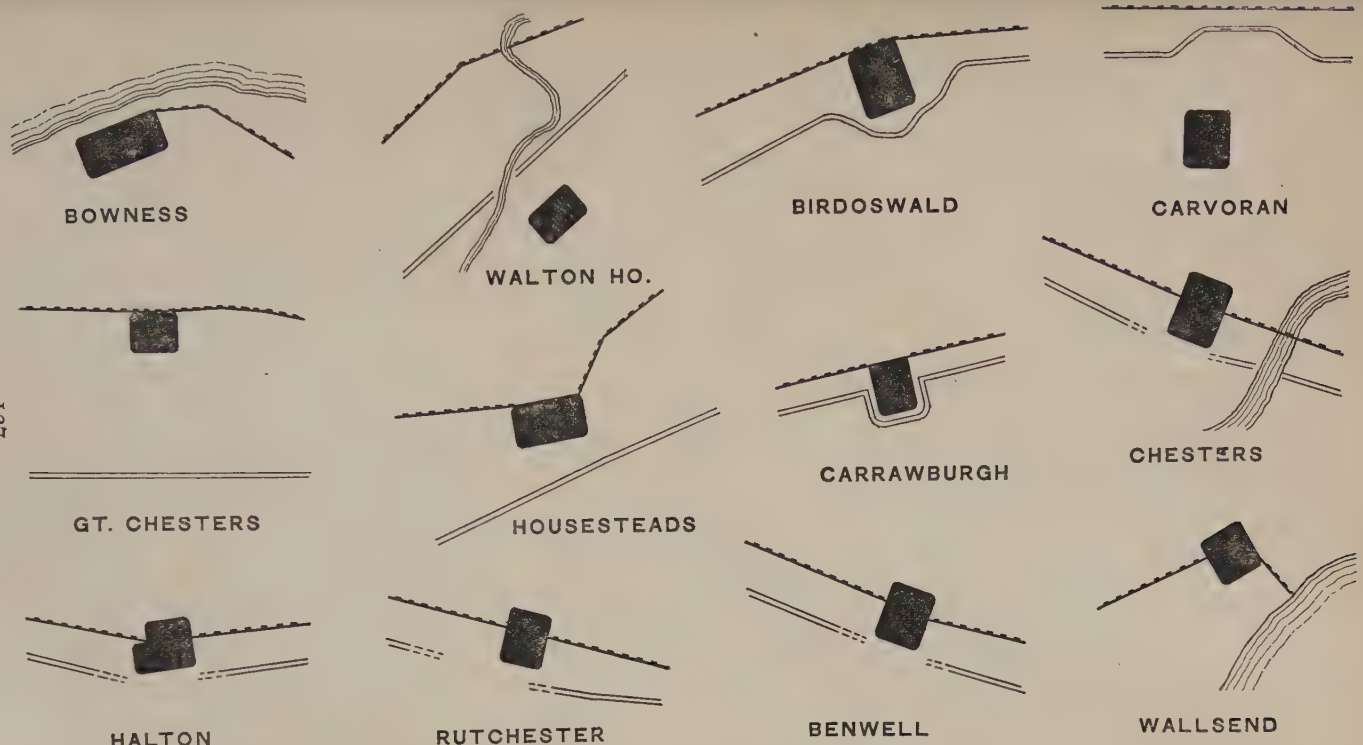


FIG. 38.—The Forts of the Wall of Hadrian and their relation to the Wall and the Vallum. The Wall is shown as an embattled line, and the Vallum as a double one.

observed that it is indistinct or even obliterated in their vicinity ; and this has given rise to the belief, reasonable enough, that whatever its purpose may have been, it fell out of use and was levelled at these places before the close of the Roman period. The excavations at Birdoswald and Carrawburgh in 1896–7, showed that the ditch of the Vallum in their neighbourhood had been purposely filled, unlike the ditches of these stations which had been gradually silted up. These excavations also afforded some ground for thinking that the Vallum mounds had been omitted in these places, but this is a point which requires further elucidation.

The obliteration of the Vallum is responsible for some wrong impressions as to its relation to the stations that stand across its line or otherwise seem to touch it. There are stations that lie beyond its extremities, as Wallsend and Newcastle in the east, and Drumburgh and Bowness in the west ; and there are intervening stations that are off its line. Of the residue, Benwell, Rutchester, Halton, and Chesters are so placed that their southern ramparts appear to be in line with the Vallum ; while Carrawburgh and Birdoswald stand across it. The old view assumed that these stations were in actual contact with it. The excavations referred to, however, have shown that the Vallum curiously avoids them by skirting round them. But the method of deviation differs. At Carrawburgh, the Vallum ditch runs parallel with the proper ditch of the fort, forming, in fact, a second ditch round its southern half ; while at Birdoswald it describes an irregular southerly semicircle. About a third of a mile east of Rutchester the Vallum was found to make a slight southerly bend, sufficient to carry it about 200 ft. south of the station. At Halton, trenching in the immediate vicinity of the station failed to find it, and the inference is that here also a deviation carried it some distance to the south. A later excavation at Walton proved that instead of pursuing its natural course north of the station, the Vallum purposely deviated so as to pass round its southern side. This curious behaviour is not confined to the stations. In following up its straight line east of Birdoswald in 1898, the excavators found it to abruptly turn southwards upon approaching a mile-castle.

The purpose of the Vallum has long been a subject of controversy, and if recent research has not provided a solution, it has

at all events rendered several popular views untenable, and so has paved the way for further advance. The 'authorized' view, which is really as old as Horsley, who saw in the Vallum "a fence against any sudden insurrection of the provincial Britons, and particularly the Brigantes," has been pronounced against by such high military authorities as the late Lieut.-General Pitt-Rivers, General Von Sarwey, Military Director of the Limes-commission of Germany, and Sir William Crossman. The peculiarity of the Vallum in avoiding the stations also tells against this theory. More emphatically does it tell against the theory which gives it a pre-Roman origin. The detours at Carrawburgh and Birdoswald clearly prove that the stations were already there, or were contemplated, when the Vallum was made. But apart from this, the lay-out of this earthwork in long straight sections is characteristically Roman. The theory that it was raised to protect the builders of the Wall is perhaps the least tenable of any, for the labour expended upon it would surely have been better employed upon the construction of those portions of the Wall where the frontier was most vulnerable; but apart from this, it is admitted by all who see in this work a defence, that it was a defence against the south, whereas the chief danger that beset the builders was from the north. More likely is it that the necessary protection was afforded by the numerous temporary camps which may still be traced in the vicinity of the Wall. The theory that the Vallum ditch was a sunken road is also unfortunate, for no excavation has yielded a trace of a roadway in this position or anywhere between the mounds; and apart from this, there is the insurmountable difficulty that the stations, which should be connected by such a road, are sedulously avoided.

A recent theory makes this earthwork a civil boundary, and this had the support, tentatively at least, of the late Prof. Mommsen, and is advocated by Dr. Haverfield.[1] Mommsen suggested "that the Vallum marks the southern or inside edge of the *limes* or 'frontier strip' of the empire," the two works, Vallum and Wall, being regarded as contemporary, but the one a legal, and the other a military line. Dr. Haverfield, in reviewing the discoveries of 1894–5–6, came to a similar conclusion, but guardedly added that "it is not, it is true, very definite, but it is much nearer a definite conclusion than we have before

[1] *Cumb. and West. Arch. Soc.*, 1899, p. 341.

been able to go." Later, he surmised that its purpose "was forgotten or ignored even in Roman times," and in support of this he instanced the evidence of the early filling up of the ditch "where its presence may well have been inconvenient, as near a fort." And in 1902 [1] he regarded the Vallum as intended to mark off the military works of the Wall from the province behind; but he doubted whether this purpose was ever fulfilled.

The reader must draw his own conclusion as to the meaning of this "strange earthwork, the inscrutable Vallum"; but it is safe to predict that his verdict will be that the last word has not been said upon it.

The Turf Wall.—The discovery of the remains of a turf wall in 1895 "introduced," as Dr. Haverfield puts it, "a new factor into the whole Mural problem." It had long been observed that for about a mile west of Birdoswald a ditch ran parallel to the Vallum at about 90 ft. to the north; and this was usually regarded as a supplementary defence to that work. But a series of transverse trenches disclosed the remarkable fact that it appertains, not to the Vallum, but to a former turf wall.[2] This ditch was found to be from 30 to 33 ft. in width across the top, about 10 ft. deep, and roughly V-shaped, with convex sides and a flat bottom about 20 in. wide. The upcast had been spread out beyond the north lip, and the wall was set back some 10 ft. behind the opposite lip. The latter appeared to have been 12 or 15 ft. wide, and it still remained 2 ft. or more in height here and there. From the manner in which the dark matter was spread out on each side, it was concluded that it had been purposely destroyed. This wall deviates from the stone wall at Wall Bowers 1½ miles west of Birdoswald, and rejoins it nearly ½ mile east of that station. The western junction was obliterated by quarrying operations, but the eastern was still traceable. At this point the stone wall makes a bend, the eastern limb being in the straight line of the turf wall, and the western diverging from it on its northern side. The ditch of the latter was found to pass under the western limb and on the other side to coincide with the ditch of the eastern limb. It was evident that the turf wall was the older, and that the later stone wall was planted on its line eastwards of the above point, but took a new line westwards.

[1] *Athenaeum*, No. 3881. [2] *Cumb. and West. Arch. Soc.*, 1896, p. 185.

The relation of the newly discovered turf wall to the Birdoswald station is equally remarkable. On either side of the fort it was found to approach the north side of the great lateral gates, and its course was traced through the intervening internal area.[1] It is clear, then, that the turf wall is not only older than the stone wall, but also older than the fort, at least in its final condition. We have already observed that the latter was either already in existence or was contemplated, when the Vallum was made, for this deviates to avoid it. Was the Vallum an appendage of the turf wall or of the stone wall? It will be observed that it is approximately parallel to the former, not to the latter; and that this is its normal behaviour to the latter elsewhere, where the configuration of the ground does not necessitate deviations. This tells in favour of the contemporaneity of the Vallum and the turf wall, and its priority to the stone wall. If so, the Birdoswald fort must have been originally smaller and probably of earthwork, and was reconstructed in stone and extended northwards when the stone wall was built.

Before the discovery of the turf wall, Mr. Cadwallader Bates conjectured with singular insight, in his *History of Northumberland*, that the anomalous ditch near Birdoswald related to a turf wall which stretched from sea to sea, and which elsewhere along its line was subsequently replaced by one of stone, the stone wall here taking a more northerly course for some reason or other; and Prof. R. C. Bosanquet has also recently expressed his belief that this turf wall extended across the isthmus.[2]

Enough has been said to show that the Wall-system did not attain its final form at one bound. It embodies works and modifications of different times, all Roman, of course. Agricola appears to have recognized the strategic importance of the isthmus, but as he contemplated nothing less than the conquest of the whole island, it is hardly likely that he entertained a continuous fortification across it. The construction of a barrier could only have been entertained after the conquest of the northern part of the island was definitely given up.

The first emperor whose name appears in connexion with the Wall is Hadrian. In four of the mile-castles have been found inscribed tablets in his honour, placed by order of his propraetor,

[1] *Ib.* 1898, p. 180.
[2] *Arch. Aeliana*, xxv, p. 243.

Aulus Platorius, and presumably there were similar tablets in other mile-castles. Some of the stations may have been such of Agricola's camps as happened to be in the line of the projected wall; but we cannot imagine a prior existence for the mile-castles—they are integral parts of the Wall itself. If Hadrian erected these, that structure must have been already determined upon. We know that when this emperor visited our shores in A.D. 120, the province was in a disturbed and unsafe condition, and we also know that his general policy was one of consolidation rather than expansion. It is true that no contemporary writer mentions his building a wall in Britain; but a century and a half later, Aelius Spartian states that "Hadrian went to Britain and put straight many things which were crooked therein, and was the first to draw a wall eighty-thousand paces, to divide the barbarians from the Romans."

But the same writer tells us that Severus, during his visit more than eighty years later, also built a wall—"the greatest glory of his reign is that he fortified Britain by a wall drawn across the island and ending on both sides with the ocean,"—and this is reiterated by a succession of subsequent writers. But, as in the case of Hadrian, no contemporary writer records such a work on his part; still more remarkable is it that both Dio Cassius, writing a few years after his death, and Herodian a little later, should describe his Caledonian campaigns in graphic terms, yet make no allusion to his wall-building.

The wall thus attributed to Severus was certainly not the Antonine, which, as we have seen, was undoubtedly the work of Pius, and was soon abandoned; moreover, it has yielded little evidence of rebuilding or restoration. It cannot have been, as has been suggested, that Hadrian built the stations and the Vallum, and Severus the stone wall; for the recent excavations have proved that the Vallum was either a coeval or a subsequent work, or, if constructed previously, was planned with a view to the latter. It would be more reasonable to reverse the order, and to say that Hadrian built the stone wall with its appendages, and Severus the Vallum.

That Severus had something to do with the barrier of the lower isthmus, is, however, beyond question. It is true that no inscription to him has been found upon the Wall itself; but his name is inscribed upon Cumberland quarries, and upon slabs at

Hexham, Risingham, and Old Carlisle. The Risingham tablet is noteworthy, as it records his restoration of a gate and the wall of the fort. Between Hadrian's day and that of Severus there had been troublous times ; and it is likely enough that the second emperor found the Wall in a ruined condition, and that he not only restored, but strengthened it.

If we accept this view of the part played by Severus, there will be little difficulty in also accepting as literally true the statement that it was Hadrian who " first drew a wall, etc." ; in other words, in assigning to this great emperor the initiation of the general scheme of wall forts, mile-castles, and vallum.

Communications and Supporting Forts.—This frontier system would be of little use without the means of expeditiously reinforcing its garrisons. It was particularly important, also, that York, the chief military centre of the north, and, in late Roman times at least, the seat of the official who had charge of the northern frontier, should be in easy touch with the whole length of the Wall. The map, Fig. 39, shows that these means of communication were admirably provided. From York proceeded a line of road in a north-north-westerly direction, which by a prime bifurcation above Catterick and subsequent ramification, reached the Wall at Newcastle, Halton Chesters, Carvoran, and Carlisle, points roughly equidistant, and in addition an extreme easterly branch ended at South Shields, where a strong fort guarded the south side of the estuary of the Tyne. By these means, in conjunction with the transverse Stanegate and Mural Road, troops could be expeditiously massed at any point along the Wall. The main artery from York to Catterick, with its continuation to the north (the Northern Watling Street), and its great branch to Carlisle, were portions of the first and the fifth routes of the Antonine Itinerary.[1]

Of less, but still of great importance, was access from Chester, and this was provided by a line of road on the western side of the Pennine range, which coincided in part with the tenth Antonine route. This joined the road from York to Carlisle at Kirkby Thore, and so participated in its connexions with the western portion of the Wall. Another important road linked Papcastle and the fortified Cumbrian ports of Maryport, Moresby,

[1] A road-list of probably the latter part of the 2nd century. See *Roman Era in Britain*, Chap. i.

and Muncaster with Carlisle, and by a short western branch with Bowness on the Solway at the western end of the Wall.

All these roads, especially as they approached the Wall, were strongly guarded by forts, which formed an inner belt of frontier defence, well capable of stemming an incursion of the

FIG. 39.—Map of the Military Remains north of Chester and York. The Walls of Antoninus and Hadrian shown as embattled lines.

barbarians into the province until reinforcements arrived, should the Wall have been successfully assailed.

Several roads crossed the line of the Wall. The two most important of these were the Northern Watling Street, which, traversing the eastern lowlands of Scotland, had its destination

in the eastern end of the Antonine Wall; and the continuation of the road from York to Carlisle above referred to, which appears to have reached that barrier at its opposite extremity by a devious and obscure route. On the former road were two important forts, the one at Risingham, and the more distant—twenty-two miles from the Wall—at High Rochester, the Antonine *Bremenium*. At similar distances on the other road were also two forts, the one, reached by a short branch road, at Netherby, and the other at Birrens, near Middleby, probably the Antonine *Blatum Bulgium*. These forts were of such size and strength as to render it almost certain that they were charged with something more than the keeping open of routes to the north, which would naturally lose importance when the Antonine Wall was evacuated. They were of strategic value to the Hadrian line. The more vulnerable parts of that line lay east and west of the central hilly region; moreover, there was the possibility of it being outflanked by the passage of an enemy across the estuary of the Tyne and the Solway. High Rochester and Risingham were well placed to check an advance upon the eastern portion of the Wall and the mouth of the Tyne; still better placed were Birrens and Netherby, with regard to the western third of the line and the Solway, the weakest part of the frontier. These four extra-mural forts may, therefore, be considered as outposts and integral parts of the Mural scheme.

The Later Frontier.—There is some evidence that in late Roman times the Wall west of Birdoswald ceased to be held or regarded as part of the frontier scheme. In the *Notitia Dignitatum*[1] is a list of the stations and of the corps that occupied them, which were under the control of the Duke of the Britains, and among these is a series *per lineam valli*. By comparing the latter with the inscriptions found in the stations along the Wall which name their garrisons, it has been possible to identify the following: Wallsend, Newcastle, Benwell, Rutchester, Halton Chesters, Chesters, Carrawburgh, Housesteads, Chesterholm, Great Chesters, Carvoran, and Birdoswald, respectively with the Notitia *Segedunum, Pons Aelii, Condercum, Vindobala, Hunnum, Cilurnum, Procolitia, Borcovicus, Vindolana, Aesica, Magna,* and *Amboglanna.*

[1] Compiled about the beginning of the 5th century. See *Roman Era in Britain,* Chap. i.

When, however, this method of identification is applied to the stations west of Birdoswald, it fails to give satisfactory results. In the first place, it is impossible to crowd the remaining eleven stations *per lineam valli* of the Notitia into the remaining third of the Wall, even if we travel some distance from its actual line. Horsley tried his best, and found that he had still five to spare; and recently, Dr. Budge reduced this excess to four. But Bruce and Hodgson doubted whether two or three of Horsley's stations could be accepted as Mural forts at all. The fact is, this western length of the Wall and its forts are more obliterated and less fruitful in the evidences of long occupation than is the case elsewhere along the line, a circumstance which Bruce attributed to the interference of agriculture, this region being extremely fertile.

The inscriptions west of Birdoswald are few and tantalizing. The only corps common to them and the list is the *Ala Petriana*, inscriptions to which occur at Lanercost (on a rock), Carlisle, Old Carlisle, and Hexham. Of these, Lanercost alone, so far as sequence from Birdoswald goes, has the best claim to be the *Petrianae* of the Notitia, but the evidence for a station here is extremely vague, and all that the inscription proves is that this *ala* came for stone. Still this suggests that *Petrianae* was at no great distance. Accordingly, it is commonly identified with Castlesteads, at Walton; but, as Bruce points out, that station was too small for so large an *ala*, which was a thousand strong. Remains of stations occur at Brampton, Watchcross (according to Bruce, only a summer camp), Stanwix, near Carlisle, Burgh-on-Sands, Drumburgh, and Bowness; but scarcely two writers agree as to their Roman names. There is evidence of another place in the vicinity of Birdoswald which is not mentioned in the document, and which may have been a Mural fort—*Banna*. An altar dedicated to Silvanus by the hunters of *Banna* has been found among the ruins of Lanercost Priory, which was built of Roman stones. This place is associated with *Aesica* on the Ravenna list;[1] and it also appears next to *Amboglanna* in the inscription of a bronze cup found at Rudge in Wiltshire, which also names two other Notitia places, *Aballaba* and *Axelodunum*. It is just possible that the Notitia *Magna* is a misspelling for *Banna*; if not,

[1] Compiled in the 7th century. See *Roman Era in Britain*, Chap. i.

it might be identified with Castlesteads, Brampton, or Watchcross.

On the other hand, there is fair evidence that the remaining eleven places of the Notitia were not on the Wall at all, but lay to the south-west and south. For instance, inscriptions to corps at these places have been found as follows: to the Second Cohort of Thracians at Moresby, and to the First Cohort of Spaniards at Maryport, two ports on the Cumbrian coast; to the Third Cohort of Nervians, at Whitley Castle; to the Sixth Cohort of the same at Brough near Askrigg; and to the *Cuneus Armaturarum*, at Ribchester in Lancashire. The evidence of the Antonine Itinerary points in the same direction, the Notitia *Glannobanta*, *Alionis*, and *Bremetenracum*, being the *Glannoventa*, *Alonis*, and *Bretemnacum* of its tenth route, and these lay far away to the south of the Wall.

The trend of evidence is strongly suggestive that the garrisons of the western portion of the Wall were withdrawn before the date of the Notitia, that is, before the 5th century. We know that towards the close of the Roman era, our shores were increasingly subject to attacks from the sea; and the long indent of the Solway must have rendered the Cumbrian coast peculiarly liable to descents from the contiguous coasts of Scotland and Ireland. Once a foothold gained on that coast, the valley of the Eden would afford easy access to the heart of the country. This liability of the western portion of the Wall to be outflanked must have greatly reduced its value; whereas the coast-forts of Cumberland and those along the eastern fringe of its highlands would be admirably placed to check these incursions. We can well imagine that these forts would be regarded as part of the northern frontier system—as a continuation, so to speak, of the eastern two-thirds of the Wall which continued to be held, and in this sense there is nothing incongruous in their being scheduled *per lineam valli* by the Notitia compiler.

CHAPTER VI

HOUSES OF THE ORDINARY OR 'CORRIDOR' TYPE

DURING the last two centuries, the remains of many Romano-British houses have been fully or partially laid bare, and have been described with greater or less detail; but our chief source of information is the exploration of Silchester. In this country their remains disclose little more than the plans, for the walls rarely stand to a greater height than 3 ft. above the old ground-level. The mosaic and other floors often remain, but the superstructures are represented by fallen materials. From these we may learn many things—how the houses were roofed, how the walls were decorated; but, speaking generally, the inferences are too vague and uncertain to admit of satisfactory reconstruction. Hence our excavators have not the good fortune of those of Pompeii, where the walls are often intact to the level of the first floors. This is due, of course, to the circumstance that that city was suddenly overwhelmed with some 15 ft. or more of volcanic ash, and thus the buildings were preserved to approximately that height; whereas in this country there was nothing to stay the work of decay and spoliation, until the level of the fallen débris was reached.

It may seem that the best procedure would be to elucidate the less-known Romano-British by the better-known Pompeian houses, since both belong to the same age and civilization. The student, however, who tries this promising method, will soon find that the one set of houses is about as unlike the other set, in that most important point, the planning or arrangement, as both are unlike the houses of the moderns. Yet the houses of Britain did resemble those of Pompeii in many particulars, notably in constructive methods, treatment of floor and wall-surfaces, and decoration. The room in Britain might lack the elegance and

refinement of that in Pompeii, but both would appeal to the visitor as the products of the same age. From these remarks the reader will perceive why any attempt to interpret the plan of a Romano-British house by reference to that of a Pompeian house is not likely to lead to satisfactory results. Our subject is one which must be unlocked by its own key, that is, by its own study. Still, several paragraphs upon the Pompeian type will be a useful introduction.

THE POMPEIAN HOUSES

In the early Pompeian house, the central feature was a lofty hall, around which the smaller rooms were grouped, into which they opened, and from which they took, in great measure, their light and air, for in the roof was a large central opening that admitted both. This hall was the *atrium*; the square opening in the roof was the *compluvium*; and answering to this, in the floor below, was a shallow pool or *impluvium*, into which the rain-water fell, the slope of the roof being towards the opening. Behind all was usually a garden.

The front door was frequently set back in a *vestibulum*, and through it was entered the *fauces* or passage between the two front rooms, which opened into the *atrium*. This spacious apartment reached, its shaded coolness would be at once appreciated after the hot and dazzling streets. Its lofty sides screened off the sun and moderated the light. The coolness was enhanced by the water of the *impluvium*, and to this delight was frequently added the ripple and spray of a fountain. As the eyes grew accustomed to the subdued light, the glowing colours of the painted walls and the doors and openings into the various rooms would reveal themselves. Behind, on either side of the opening into the *fauces*, was a door into each of the front rooms. On the right and left hands were those (two or three on either side) of the bedrooms, usually lofty, with gratings or other openings above to admit light from the *compluvium*. Beyond these were the wings or *alae* of the atrium, two recesses or rooms opening into the main space by their full width. Facing the visitor was the large curtained opening of an important room which looked upon the garden in the rear. This was the *tablinum*, the summer-room of the house. There, in the hottest

weather, the family dined; and even during the colder months, this room would have some degree of warmth when the curtains were drawn and the garden doors were closed. But it is more likely that one of the rooms flanking the *tablinum* was used for this purpose in winter, the corresponding room on the other side being perhaps the kitchen.

Such was the Pompeian house, reduced to its more essential features and unmodified by Greek influence. Prof. Mau [1] in an interesting manner traces its pedigree. The *atrium* was the primitive living-room. The *impluvium* marked the site of the family hearth. The *compluvium* represented the hole in the roof through which the smoke escaped: and from the smoke-

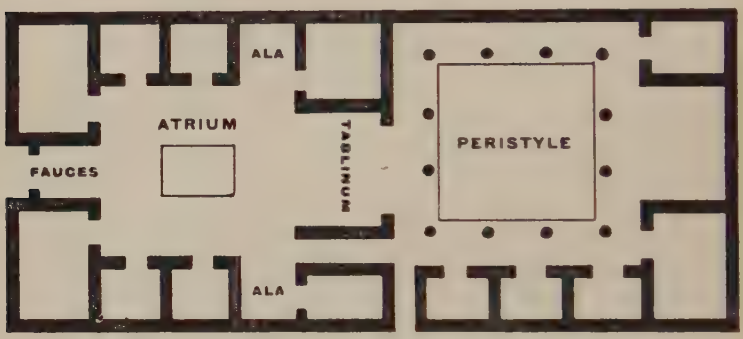


FIG. 40.—Typical Plan of Pompeian House. (After Mau.)

blackened timbers arose the name of the apartment, from *ater*, black. But long after the hearth was banished to its special room, the kitchen in the city house, the *atrium* retained its original uses in the farmhouses.

From the second century, B.C., onwards, the Greek peristyle became an integral part of the more sumptuous houses. The garden was now surrounded by a colonnade, and upon this opened the more secluded rooms to which the family life tended to gravitate. The Greek names of these rooms were retained—*triclinium, oecus, exedra*, etc., and bespoke their origin. The *atrium* became little else than a grand entrance hall, and the *tablinum* the reception-room for those visitors who were not admitted into the privacy of the home.

[1] Mau, *Pompeii*, 239–73.

Between these Italian and the modern houses there is this striking difference: the former took their light and air from within; the latter take it from without. In other words, in the one the front may be said to look inwards; in the other, outwards. The almost windowless exteriors at Pompeii, of low and irregular elevation, placed their architects at a disadvantage when compared with their modern successors; for such exteriors were ill-adapted for architectural treatment. Hence the difficulty was usually met by the profitable procedure of letting the outer rooms, which abutted on the streets, as shops; consequently, the only evidence of the presence of private residences would be their ample front doors, showing here and there between the shops.

THE CALLEVAN HOUSES

There are several reasons why the Silchester houses should first have our attention. The site of the ancient city has yielded the remains of nearly one hundred buildings that have been identified as houses. The systematic method of the excavation is an assurance that the small, equally with the large, have been brought to light. Each has been described in a careful and detailed manner, and planned to the same scale. The Reports thus afford both abundance of material and facility for comparative study—matters of supreme importance, for the remains of Romano-British houses are invariably too slight to afford complete ground-plans. Another advantage may be noted. As most of the Silchester houses, unlike those of Pompeii, were separated by intervening gardens and yards, their builders were rarely under the disability of having to conform their work to the shapes of the sites.

The plan of Silchester is strewn with buildings, but with a little patience the dwelling-houses can be distinguished. These, however, differ considerably in shape, size, and complexity. The smaller houses consist of a row of rooms, and in the larger these are arranged along three or even four sides of a courtyard. The remaining houses represent every transition between these extremes. We might fancy that the Silchester houses had grown according to a definite law, and that most of them had been arrested at some stage of their growth, only a few reaching maturity.

This growth must have been determined by something that was regarded as essential, and the central courtyard, which is so prominent a feature in the more elaborate houses, supplies the clue. This space, as we have already noticed, was sometimes quite surrounded by the house; more often it was only partly so. But in these cases, the circuit was now and again completed by a wall, or the side or back of a neighbouring house helped to define its form and extent. Where walls in these positions have not been found, wooden fences may have been used, as the use of timber was much resorted to at Silchester. Courtyards were equally characteristic of the large country houses of the time, and some examples will be given later. The evidence in the case of the smaller and simpler houses is not so clear; but it is significant that their plans invariably show the ground about their fronts as free from buildings of any sort. Whether these plots were fenced in, it is impossible to say, but the analogy of the more elaborate houses favours the view that they were.

There is good reason, therefore, for thinking that it was a prevailing custom in Roman Britain for the front of the house to look upon an open space. We can well imagine that if the owner of a small house, that occupied only one side of such a space, wished to enlarge it, he would erect his new extension along one of the contiguous sides of that space, and that further enlargements would follow the same rule until it was wholly enclosed by his buildings.

The plans of the smaller (but not always the smallest) Silchester houses present a row of rooms bordered with a corridor or verandah on one side, which may or may not extend the whole length of the building. If it does not extend the whole length, the shortage is almost invariably at one end, and is made good by the enlargement of one or more rooms at that end; or the enlarged end or 'head' may overstep the corridor to form a wing. The normal position of the entrance is in the end of the corridor opposite the 'head.' These three forms are diagrammatically shown in Fig. 41, A, B, C, the body of the house being shaded with diagonal lines, and the corridor left white, while the garth is indicated by broken lines.

In the more complex plans, such a simple block, whether oblong or L-shaped, usually forms the main body or nucleus of the house, the extensions taking the form of adjuncts or outshoots.

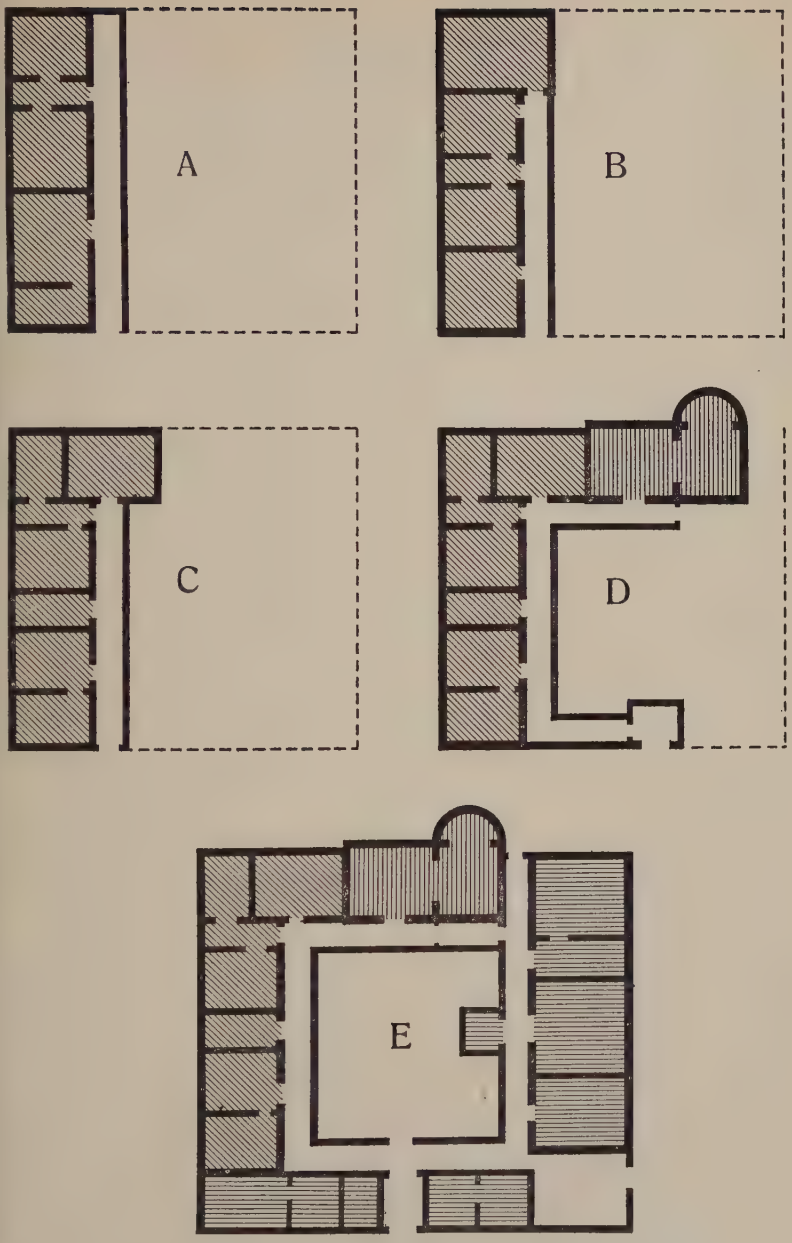


FIG. 41.—Diagrammatic Plans to illustrate the development of the Romano-British House

Certain large rooms may be added to the end of the wing. The opposite end of the corridor may be developed into an entrance-lobby wider than itself; or this lobby may be altogether removed from the main block, and be connected with it by a corridor, lobby, and entrance-corridor forming a minor wing and more or less closing in the side of the garth opposite the chief wing. The main corridor, again, may have a corresponding return at its farther end to serve that wing. D illustrates these developments, the added rooms being indicated by vertical-line shading. Lastly, further extensions and rebuildings, as indicated by horizontal-line shading in E, may complete the closing-in of the courtyard.

A further addition may often be noticed. It consists of a corridor-like strip along the back of the house, usually wider than the corridor proper; and as it is sometimes divided by cross-walls, its use apparently was to provide additional rooms, the divisions probably being of wood as a rule. So far, we have little difficulty in distinguishing the main block from the extensions; but in the largest and most elaborate houses this is not always easy. In these cases, however, the difficulty is usually caused by the presence of two such blocks.

While many of the more complex Silchester houses unquestionably *grew* somewhat in the manner just described, the remains of others convinced the explorers that they had been planned and built outright. Like the higher animals which embody in their own anatomy reminiscences, so to speak, of the simpler ancestral forms from which they were derived, *these* houses bear witness to a change in the social conditions—to a passage from simpler to more luxurious modes of life during the Roman era. The modifications above described illustrate the evolution of the *type*, not necessarily that of the individual house.

We must now study the Callevan houses more minutely, and first the 'house-block,' whether constituting a complete house in itself, or forming the nucleus of a larger house. It consists, as has been observed, of a row of rooms bordered by a corridor, with or without a 'head.' The corridor was the chief means of communication between the rooms, but not invariably so, as occasionally a room was entered from an adjoining one, instead of from the corridor. The general construction of these blocks is somewhat problematic, as we have little more than founda-

tions to guide us. There is little doubt that the corridor was normally, an external feature, for its outer wall is often noticeably slighter than the shell of the suite of rooms. This, in its turn, suggests that the shell was of more than a single storey; and here again favourable indications have been observed. Probably we shall not be far wrong if we picture the 'house-block' as of two storeys, with a pentice corridor running along one side to the height of, or slightly above, the first floor. We may further picture the corridor of a more elaborate house as passing round a central court or garth, as in the Caerwent house, B, Fig. 44. This recalls the familiar cloister square of a medieval monastery, surrounded by its covered ambulatory, into which the doors of the claustral buildings open. Excluding the corridor as a lean-to accessory, the Silchester 'house-blocks' varied in external width from 16 to 24 ft. or even more, the majority ranging from 19 to 22 ft.; while in length they varied much more, the shortest being 54 ft., and the longest about double that length. The average width of the corridors was 9 ft. They also varied in the number and size of the rooms they contained—we refer, of course, to the ground-floors: we can only guess how far the rooms above corresponded. The plans given in the reports are those of the *remains*, and must not be taken as fully representing the original ground-plans. Doorways, which must have existed, may not be shown, the walls which contained them having been reduced to below the levels of their thresholds. The partitions which are shown are only those which were of stone or were upon stone foundations; others there may have been which were constructed of timber only, and which have disappeared by the process of natural decay. It is wise, therefore, to keep these contingencies in mind, and to draw our conclusions from a large number of plans, rather than from a selected few on account of their apparent completeness.

If these buildings were of more than one storey, as they certainly appear to have been, their upper storeys must have been reached by staircases. No remains of staircases, however, have been observed so far as the writer is aware, and this is not surprising, if, as probably was the case, they were of wood. They could scarcely have been placed in the corridors, for these were probably little higher than the first floors, and their pavements have furnished no indications of the sites of staircases.

Had they been external structures, they surely must have rested upon stone foundations, but nothing answering to these has been observed. The alternative is that the staircases were within the main buildings. In some of the Silchester houses narrow apartments that were certainly not passages have been observed, and probably these contained staircases; equally feasible is it that in some of the cross-divided rooms the inner room contained a staircase and the outer was its lobby. Such a divided space in House 2, XXIV [1] is especially noteworthy. This house was set back from the street, and its front corridor, A, Fig. 42, was connected with the street by another corridor, C. The latter faced the lobby, D, which had doors into the rooms on its right and left, and into that behind. This back chamber, in its turn,

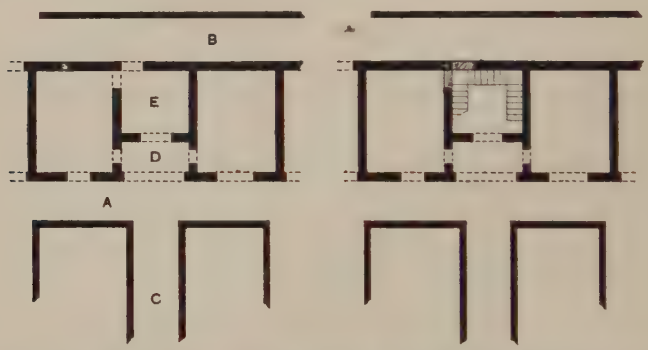


FIG. 42.—Portion of House 2, xxiv, Silchester, showing probable site of staircase.

had a door into the room on the left and another into the back corridor, B, but this, it will be noted, was not centrally placed. The lobby and the chamber behind it thus afforded direct communication between the street and the back corridor. But if this was their chief end, it is hard to understand why the builder should have marred an otherwise symmetrical vista by placing the back door on one side. If, on the other hand, we suppose that the chamber contained a staircase, the difficulty vanishes. It was large enough (14 by 11½ ft.) to accommodate one 3 ft. wide, which, attached to the right, left, and back walls, and rising by three flights of six or seven steps, would reach a height of from 10 to 13 ft., and leave space for landings, 3 ft. square,

[1] *Archaeologia*, lvii. p. 238.

in the corners, as shown on the next plan. Such a staircase explains the position of the back door, as under the second landing there would be ample headroom, which would not be the case midway under the second flight. It also explains the absence of a door into the room on the right corresponding with that on the opposite side, as a door in such a position would be blocked by the lower flight. A similar arrangement of anteroom and chamber behind it, occupies a similar position in House 1, XXVII.[1] The former opened into the corridor and faced a large door into the courtyard. The latter had no back door, perhaps because the house was built against along the back; but it had a door on the right hand in the far corner, into the adjoining room, and this suggests a staircase winding to the right, instead of the left, as in the above example. Other Silchester examples could be instanced, but the arrangement of their doors is less conclusive for the staircase hypothesis.

A few pages back, the successive stages between the simpler and the more elaborate Silchester houses were illustrated by a series of diagrammatical plans, and it was pointed out that the successive enlargements were mostly of the nature of outshoots from a nucleus or 'house-block.' A few actual examples will now be given.

A, Fig. 43, is the plan of House 3, XVIII[2]—a compact little house with a 'head' so slightly wider than the rest of the block, that its interference with the general oblong outline is scarcely noticeable. Unfortunately, the remains were too slight to allow of the position of more than one internal door being given, and nothing could be said of the floors, except that the corridor was paved with red mosaic. Whether this corridor had a door at its lower end is uncertain, but its upper end opened into a yard which reached the street; and it is likely that access to the house was through this yard. Facing the entrance to the corridor was a passage-like room which the explorers regarded as the site of a staircase. Six circular masses of rubble were found in the yard, and as they probably supported as many millstones, we may infer that the house was that of a miller or baker.

B (House 2, XVI)[3] is an example of a house of the simplest corridor type, subsequently modified and added to. The room at the lower end is an addition. It is probable that the corridor

[1] *Ib.* lviii, p. 18. [2] *Ib.* lvi, p. 112. [3] *Ib.* lv, p. 418.

originally overlapped the large room at the opposite end, but was pulled down upon the introduction of the hypocaust into that room, to allow of a yard, stoke-hole, and several outbuildings, one probably for the storage of wood for the hypocaust. No doorways remained, but there were indications of a back door in the outer of the second pair of small rooms. Most of the floors were of plain mosaic; but the inner of the pair of small rooms just referred to had traces of an earlier one of simple ornamentation.

C (House 2, II) is the plan of another modified and extended house. The sill of only one door remained, but the positions of several others could be inferred. Unlike both the previous examples, which lay back from the street side, this stood at a corner, its back to the one street, and lower end to the other. The street door was, with little doubt, in the lower end of the corridor, and had on one side a little chamber—certainly an addition to the original plan—for a porter or to serve as a cloak-room. The greater thickness of the walls of the oblong 'head' suggests that this was not coeval with the corridored portion of the house; but we can hardly agree with the surmise of the explorers that it represented the original house. It is more in accordance with the general analogies of the Silchester houses to regard it also as an addition. The room at the farther end of the corridor was the largest in the house, and it opened into the winter room, an external adjunct. These two rooms were certainly the most important in the house, the former having a rich mosaic floor, and the latter being heated by a hypocaust, which was stoked from a small chamber at its angle. The other rooms had plain mosaic and cement floors. The large room at the opposite end of the building appeared to have a wide opening to the street, and for this reason was regarded as a shop by the explorers.

D is a decided advance on the last. It represents the older portion of a large house (House 1, XXVII)[1] in its original condition. It is a singularly perfect plan, almost every possible door on the ground floor being shown; and it has all the appearance of being a single design and not the outcome of modifications and extensions. The plan tells its own story almost at a glance. You enter the lobby from the street and traverse the corridor,

[1] *Archaeologia*, lviii, p. 18.

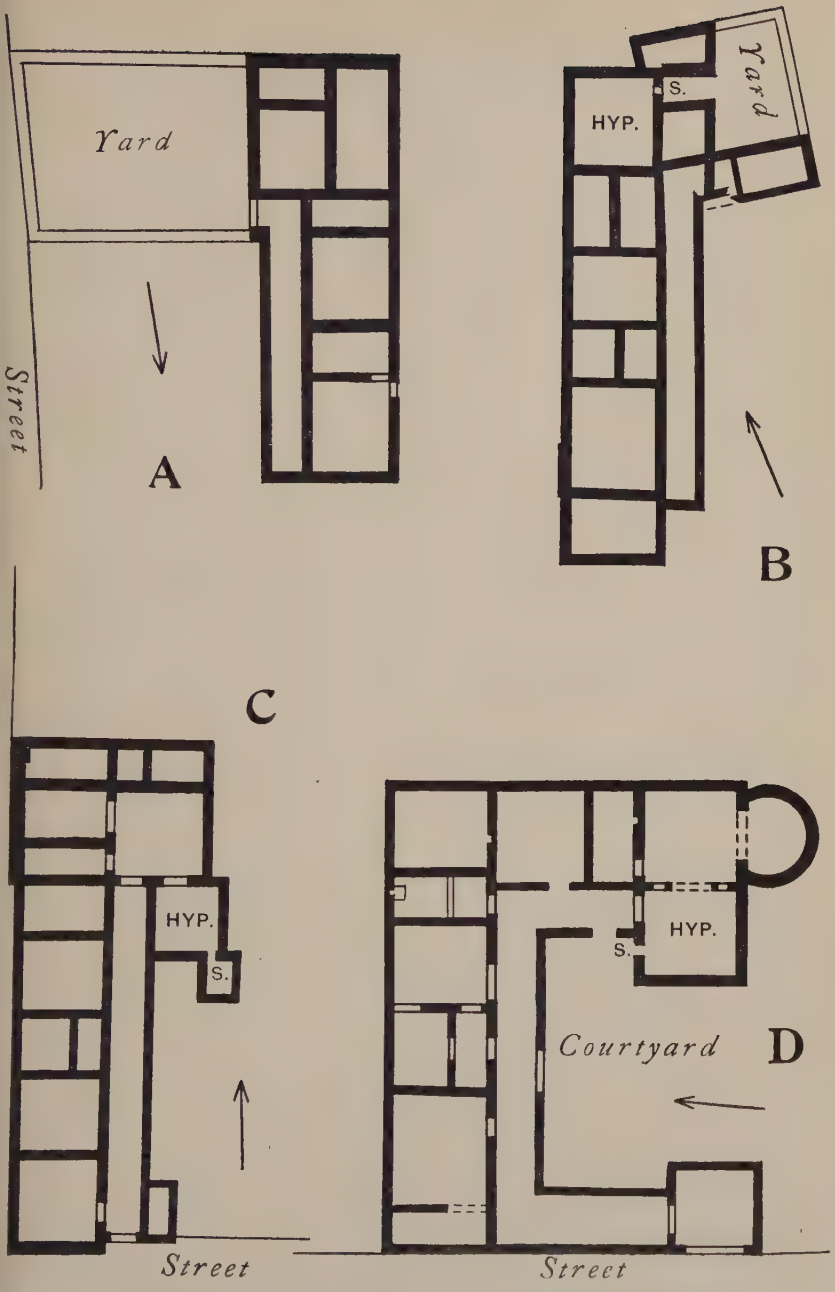


FIG. 43.—Plans of Houses, 3, xviii ; 2, xvi ; 2, ii ; and 1, xxvii, Silchester. (After Hope.) (40 ft. to 1 in.)

passing, in so doing, the doors of the rooms of the main portion of the house and its wing, and finally reach what may be appropriately termed the state apartments. These communicated with one another by a large bay flanked with columns or piers, the one terminating in a semicircular recess or apse, and the other heated by a hypocaust. The rooms of this house show a progression from the menial to the sumptuous. The first two, reached from the street, seem to have had floors of mortar or other perishable material, as they had disappeared. The next, a narrow apartment, which we have already regarded as the vestibule of a staircase, had a plain mosaic floor, and the room behind, one of cement. The next room had also a plain mosaic floor, and in addition a bold quarter-round skirting. The two small rooms beyond this had also plain mosaics, and the outer, a recessed fireplace. The last room of the range had an ornate mosaic floor, also a fireplace. This brings us to the wing containing the most sumptuous rooms of the house, and it should be noted that the outer of its pair of little rooms, like the one mentioned above, had a fireplace.

The next example, A, Fig. 44 (House 1, VIII),[1] closely resembles the last. The street door was flanked by two projecting blocks, evidently the bases of pilasters which carried an entablature or pediment—a frequent feature in the larger Silchester houses. Near the middle of the main corridor was a square room with wide entrance and rich mosaic floor, which projected into the courtyard. Rooms in similar positions may be seen on other Silchester plans, but whether they had a special use is uncertain. The far return of the corridor was longer than the corresponding return in the last house, and it abutted against and probably opened into an enclosed yard. The 'state apartments' were entered from its side, and they closely resembled those of that house. The fire of the hypocaust was stoked from the yard, and hard by was a small building which was probably the wood-house.

The floors of this house show a similar progression to those of the last, only not so marked. In both, the nearest large room to the street was regarded as the kitchen by the explorers. These houses, therefore, present a reverse order from what generally obtains to-day—our custom being to associate the chief rooms

[1] *Archaeologia*, liv, p. 212.

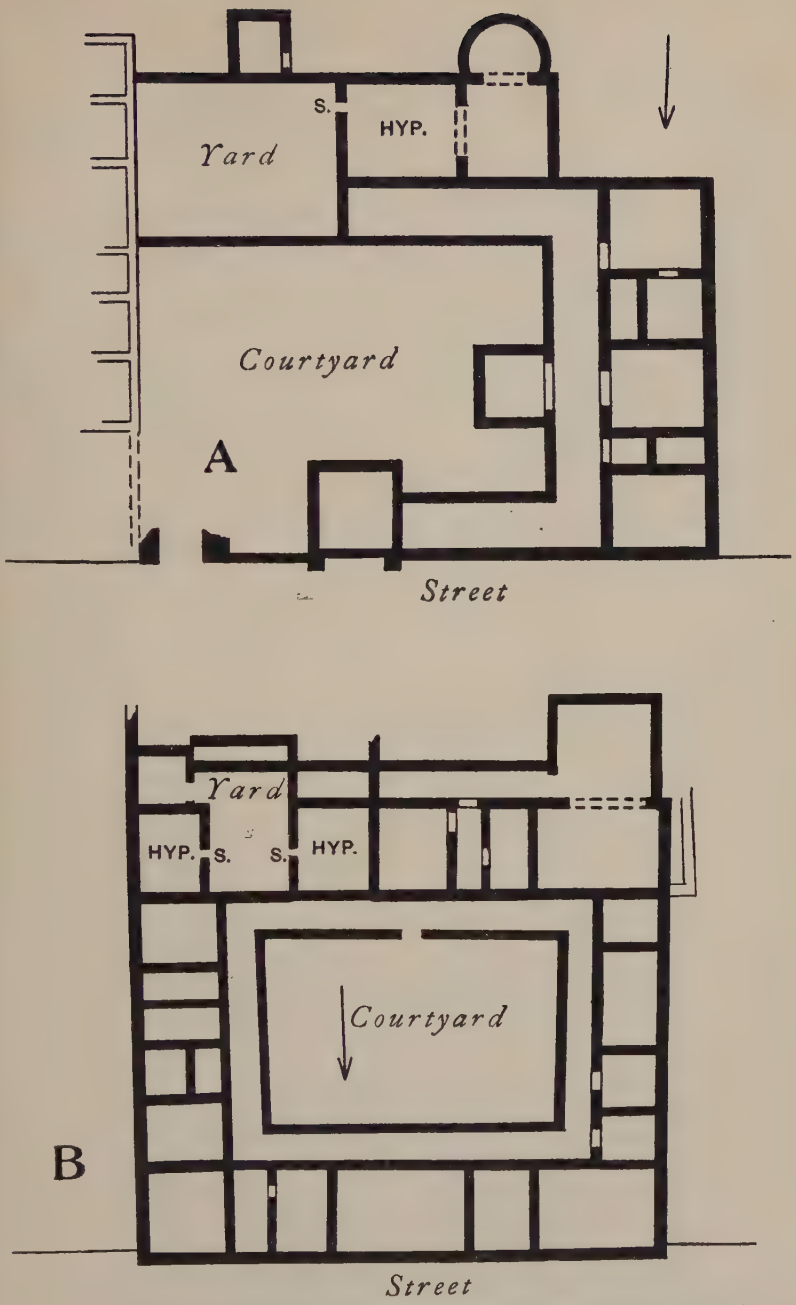


FIG. 44.—Plans of Houses 1, viii, Silchester (after Hope); and 7, Caerwent (after Drake and Pizey). (40 ft. to 1 in.)

with the chief entrance, and to place them in the front of the house, the kitchen and other menial rooms being at the back. The regular progression observed in these two houses was not frequent at Silchester; but it was a general rule that the chief rooms were the furthest removed from the 'front' door.

Another feature of the house we are considering should be noticed. The 'state rooms' constituted a distinct block, connected with the main body of the house only by the corridor. From their large size, it is probable that they were loftier than the other rooms, and as there is no provision for a staircase, it is reasonable to that think they were of a single storey. Reasoning from analogy, we may infer that the corresponding rooms in our previous example, although attached to the wing of the house, were also of a single storey. Many rooms heated by hypocausts occur as external adjuncts on Silchester plans, which could not well have been of more than a single storey each. If we are right in these conjectures, we may picture these two houses as consisting each of a main portion of two storeys—L-shaped in the one case, and a simple oblong in the other—with various adjuncts, each of a single storey, in the form of corridors, entrance lobby, state apartments, etc. It will also be noticed that in the present example the garth was wholly enclosed, the neighbouring house closing it in on one side, and a wall with a gateway completing the circuit along the street.

In our next example, Fig. 45 (House 1, XIV),[1] the garth is entirely surrounded by the house—one of the largest and most elaborate in Silchester. The remains proved, as indeed the plan indicates, that this house only attained its final form after many alterations and additions. Along each side of the garth was a corridor, but that on the right-hand side was extended, front and back, through the house, dividing it into two unequal portions. The block to which this corridor properly belonged contained a series of large rooms with a lateral one at the end on the outer side, the rest of that side being bordered by another corridor, which, passing round the lower end, joined the inner corridor. The rooms of this range were the most sumptuous in the house, most of them having rich mosaic floors, while that at the far end, with its lateral neighbour, and a small room attached to the outer corridor, had hypocausts.

[1] *Archaeologia*, lv, p. 220.

The larger portion of the house passed round the remaining sides of the courtyard, and abutted against the inner corridor of the range just described. Like that range, it consisted of a row of rooms between two corridors, the outer of which was here and there divided into small chambers, and next the street there

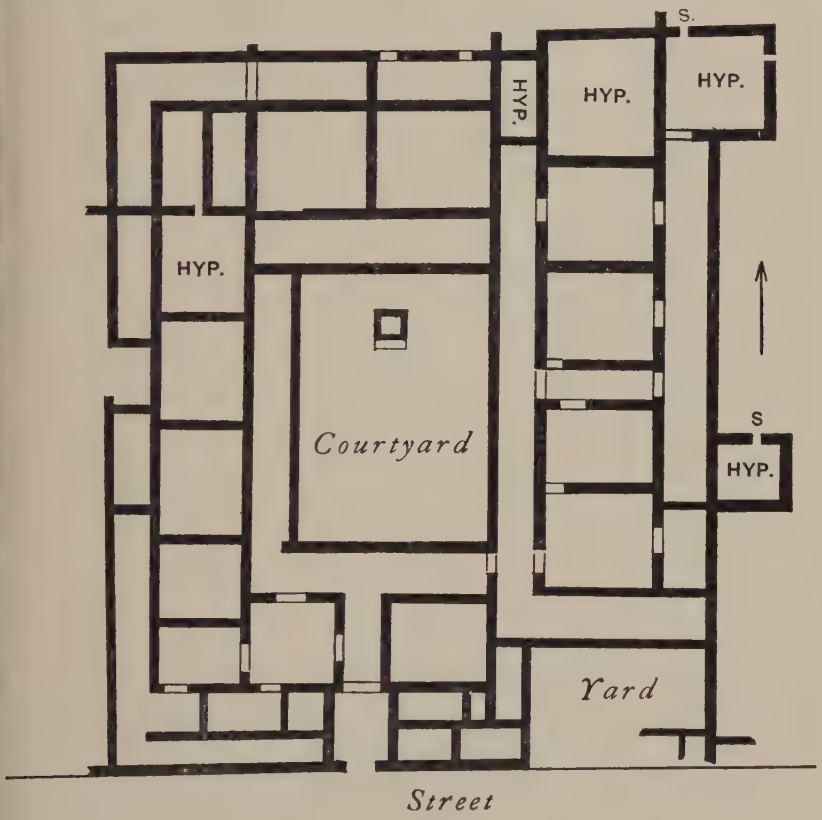


FIG. 45.—Plan of House, 1, xiv, Silchester. (After Hope.) (40 ft. to 1 in.)

was a double line so divided. The rooms had floors of plain mosaic or other material, and one was heated by a hypocaust. The lower wing contained an entrance lobby and passage which afforded communication between the street and the courtyard corridors. In the courtyard was a small square building, probably a *lararium* or shrine for the household gods.

The plan is too complicated to admit of a satisfactory reconstruction of the house. It is reasonable to think that the range of rooms on the right formed a block of more than a single storey, which was connected with the main and probably older portion of the house by the width of its inner corridor only. Equally reasonable is it to think that the narrower range on the opposite side of the courtyard formed a lofty block, but it is less certain whether its returns or wings were of the same height.

The examples given above illustrate the chief characteristics of the Callevan houses and the usual lines on which their type developed. The reader who would pursue the subject further, should study the following plans in the order given :—

House 3, Insula XXXII	House 2, Insula XXI
,, 4, ,, VII	,, 4, ,, VIII
,, 1, ,, III	,, 1, ,, XXVII
,, 3, ,, XVIII	,, 1, ,, VIII
,, –, ,, XIII	,, 2, ,, I
,, 3, ,, V	,, 3, ,, XXI
,, 3, ,, VII	,, –, ,, XIX
,, 2, ,, XVI	,, 2, ,, XXIII
,, 2, ,, II	,, –, ,, XXIV
,, 2, ,, XXXIII	,, 2, ,, XIV
,, 1, ,, XXI	,, 2, ,, XXVI
,, 3, ,, IX	,, 1, ,, XXIII
,, 1, ,, XXII	,, 1, ,, VI
,, 2, ,, VI	,, 1, ,, XIV
,, 1, ,, XXIV	

These represent the majority of the Silchester corridor houses, of which the remains were sufficient to admit of reasonably complete plans ; and the reader will observe that in their progressive development from the simple oblong house to the elaborate courtyard house with which the list concludes, they corroborate the above conclusions. There are exceptions, it is true, but they are few. In most instances the irregularities are caused by additions which owe their eccentricities to the situations of the original structures to which they were appended. In the simpler houses, the determination of the aspect is easy enough, as only that side which had the corridor and faced the garth can be regarded as the front. In the more complex houses there were two, three, or even four sides which faced the garth, and all may be regarded as fronts. But there is rarely any difficulty in distinguishing the main block from its wings and offshoots,

and it is only reasonable to regard *its* front as the principal one, and its outlook as the aspect of the house. Many of the plans are too imperfect to allow of the aspect being determined with any certainty; but out of 59 which admit of no doubt in this respect, 28 face the south; 23, the east; 5, the south-east, and only 3, the west. That 56 of these faced cardinal points is due to the streets running north and south, and west and east; but this does not explain the preponderance of south and east aspects. The circumstance that 28 faced the south and not one the north supplies the clue—the Callevans preferred a sunny aspect. This was only natural, for, as the rooms opened upon the corridor, it was desirable that during the colder months at least, this part of the house should be as warm as possible and should be screened from the north. The preference for an eastern over a western aspect is probably to be explained by the fact that the corridor would receive the morning's sun, and the heat thus stored would warm it for the rest of the day. Of the 3 houses which faced the west (House 3, XXXII, and the single houses in XIII and XXIX), the first was too near the town wall to allow of a garth on its east or south sides, and the other two were built against the east sides of their streets, the owners apparently preferring to have their garths secluded from the thoroughfares.

The positions of the Silchester houses must now have our attention. Of the 94 with plans sufficiently complete to show that they were of the corridor type, 66 were street-side houses, and the rest were set back within the *insulae*, but many of these were connected with the streets by wings or outshoots. It is noticeable that most of the street-side houses which did not occupy corner positions, came up to the street 'end on,' and in every case where it can be determined this was the inferior end. The few that came to the street by their length turned their back upon it. The corner houses followed the same rule, each, with only one doubtful exception, presenting its back to the one street, and its end—always the lower end where determinable—to the other.

The houses which lay back from the thoroughfares may be roughly divided into two classes—those which ranged with the street-system, and those which apparently disregarded it. The former consist of houses which faced their adjacent streets, and were sufficiently set back to allow of the intervention of the usual

garth. Houses 1 and 2, XXIV ; 3, XXI ; 2, XIV ; and the house in XIX, are good examples of these, and may with propriety be regarded as street-side houses. The latter are conspicuous on the plan, not only because their orientation is out of gear with the streets, but because they are scattered about the *insulae* in an irregular fashion. These have already been referred to in page 42. Some of them subsequent to their erection were connected with the streets with corridors and other buildings ; such a corridor from House 3, XXVI, had the extraordinary length of 90 ft.

THE COUNTRY HOUSES

The term ' villa,' as popularly applied to these houses, is inaccurate. The villa was the Roman counterpart of the medieval manor—the estate of a landed proprietor. It comprised not only his residence, but those of his *villicus*, or bailiff, and of his servile and semi-servile dependents, his farm-buildings and granaries. The estate was the villa ; the residence of the *dominus* was the villa-house. Another popular misconception arises from the circumstance that the majority of these houses that have attracted attention and have been excavated, are the larger and more sumptuous. Hence Roman Britain is commonly regarded as a land studded with palatial mansions, the residence of foreign officials, sharply contrasting with the huts of the natives. Some of the country residences were on an almost palatial scale, but this was exceptional. The majority of those which have been excavated would be better described as commodious and comfortable. The exploration of Silchester has proved the existence of smaller houses, yet very far removed from cottages and still more so from huts ; but perhaps these smaller houses were more characteristic of the towns and their suburbs. The officials could never have been so numerous as to have required the vast number of large country houses that must have existed, and it is almost certain that most of them dwelt in the towns. The population was substantially one of Romanized natives, and these rural mansions are better regarded as the seats of the country squires—native gentlemen who had adopted Roman tastes, and whose wealth lay in their broad acres, and in their crops and herds.

These houses abounded in the fertile lowlands of the southern half of England. Northwards, their remains are found in Lincolnshire, but they practically cease with York and Aldborough.

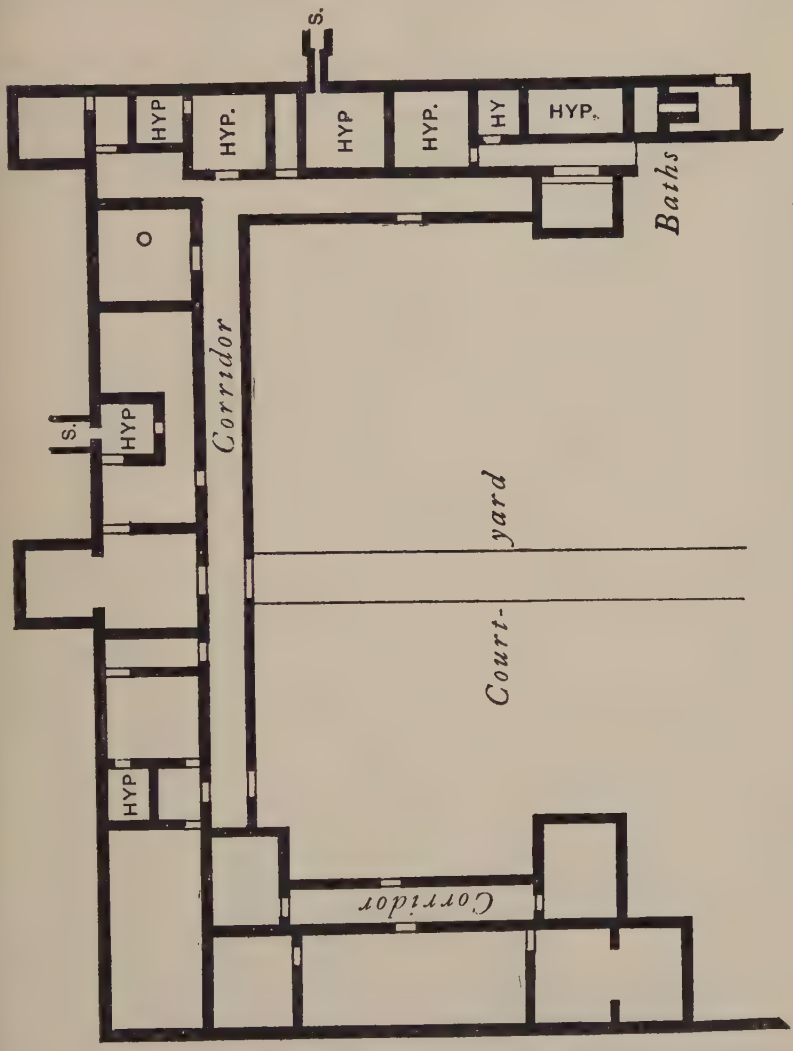


FIG. 46.—Plan of House at Spoonley Wood. (After Roy.) (40 ft. to 1 in.)

This distribution represents the portions of the island where the population was the most Romanized and wealthy, and where the conditions of life were best and the land most cultivated. These houses were not fortified, nor were their sites selected for

defensive purposes. The Romano-British proprietor, unlike his medieval successor, had little need to defend himself and his property. Roman Britain was not a land of castles and strongly moated halls. The houses were planned and designed for domesticity, with large rooms and wide corridors, contrasting in this respect with the cramped rooms and narrow passages of the feudal strongholds of a later age, in which comfort was subordinated to safety. Their sites were selected for convenience, agreeable surroundings, and pleasant prospects. These conditions bear witness to the general order and safety which the land enjoyed under the imperial rule during its best period.

The country houses resembled those of Silchester in their general planning, but they differed in several respects. They were usually less compact, the builders not being limited as to space; and to meet the requirements of rural conditions they had associated with them farm-buildings, often on a large scale. The 'villa-group' clustered round an open space larger than the town courtyard. The largest houses generally had two such spaces, a house-court round which the residence was built, and a lower or base-court, usually larger, appropriated to the farm-buildings. Occasionally there were two base-courts. Again, the country houses had semi-attached or isolated baths; the Silchester houses never, as the town was well supplied with public baths.

The excavation, about twenty years ago, of a 'villa' at Spoonley Wood, near Winchcombe in Gloucestershire, a county rich in these remains, supplied a singularly complete plan of a medium-sized country mansion, which is here reproduced (Fig. 46) in simplified form, from one which accompanies Prof. Middleton's concise description.[1] Like many of the country mansions of the period, it was beautifully situated at the foot of a hill, from which issued a plentiful supply of pure water. It consisted of a main range with two wings, with its back to the hill and its front to the north-east. The wings extended along two-thirds of the sides of an enclosed garden or courtyard, the circuit of which was completed by a wall, the whole occupying a rectangular space about 190 by 170 ft. The pentice corridor ran along the three fronts, and ended with projecting rooms in the wings. The approach to the house was through a gateway in

[1] *Archaeologia*, lii, p. 652.

the front wall of the courtyard, and along a paved walk which led to a door in the main corridor. This door faced a large double room, the chief room of the house.

If the plan is carefully studied, it will be found that the rooms fell into several groups. In the lower portion of the right wing were the baths, entered by a special passage from the courtyard, and heated from their own furnace. Then followed a suite of three rooms heated by hypocausts, which were fed from another stoke-hole. The rooms of the main block appear to have been the living apartments. The first large room of the range contained a well and a stone table, and with little doubt was the kitchen, conveniently placed with regard to both wing and main block. The two small apartments at this corner of the house were probably store-rooms. On the left was a small room raised above the general level, and entered by a flight of steps, which had a rich mosaic floor, and below it a hypocaust fed from a stoke-hole immediately outside the house. A flue from this hypocaust traversed the next four apartments, and supplied heat to that of another small inner room, warming in less degree the intervening floors. The range terminated on the left in a large unheated hall. The left wing, like the baths, had no internal communication with the rest of the house, and Prof. Middleton's conjecture that it contained the apartments of the household slaves has much to commend it. It can hardly be questioned that at least the main block was of more than one storey, and that the narrow chamber on the left of the spacious central apartment contained the chief staircase. Of the farm buildings only a barn or granary was brought to light in such a situation as to suggest that it stood on the left side of a base-court. It will be described in the next chapter.

At Chedworth, near Cheltenham, were discovered the remains of a house of similar size in 1864.[1] There was a base-court, but only the buildings along its right or north side were excavated. Between it and the inner or house-court, which lay to the west, stretched a wall with a pentice or corridor along its inner side, and near the middle was a square gate structure, which faced, as at Spoonley Wood, an entrance in the corridor of the main range of the house. This range contained the principal living rooms, with the baths at its northern end, each set of apartments being

[1] *Brit. Arch. Assoc.*, xxiv, p. 130; xxv, p. 219. *Arch. Jour.*, xliv, p. 322.

entered from the corridor by a separate door reached by a flight of steps, the range being on a higher level. The south end of the range was not fully explored, but the first excavated room was the principal one of the mansion. It was large and was divided by a wide bay into two unequal divisions, which were emphasized by a difference in the decoration of the mosaic floor. This room was heated by a hypocaust, fed from a stoke-hole at its south end; from which circumstances it is probable that the partially excavated space to the south was an enclosed yard with provision for the storage of wood. The double room was entered from a narrow lobby on its north side, and as hereabouts were found fragments of two small statues, it may have contained the domestic shrine. Between this and the baths were several rooms of uncertain use. The south range was not fully excavated, and probably it projected into the base-court. The rooms were of a plain description, and one may have been the kitchen.

The north range was wholly detached. It was irregular in plan, and of two periods of construction. Beginning at the western end, there were two small rooms with apsidal recesses containing tanks heated from an external furnace room or shed; then a large oblong room or court with a square tank between two smaller semicircular ones at its north end. Then followed in succession another large room with a semicircular end; two small square rooms; and another large one with a semi-octagonal end and heated by a hypocaust. Instead of a corridor of the usual type, these apartments were entered from a portico supported on columns next the courtyard, of which two remain *in situ*. This portico widened eastwards into a fine hall-like space. From this remarkable block extended the long corridored range of rooms, several heated by hypocausts, already referred to as on the north side of the base-court. Prebendary Scarth regarded this range as the servants' quarters, and the curious porticoed block as their baths. If so, the proprietor must have had unusually liberal views of their requirements, for both the rooms and the supposed baths were on a larger scale than his own. Mr. G. E. Fox argued that as the house was already provided for in these respects, in the west and south ranges, this range was devoted to some industry, which he suggests was fulling and dyeing.

Away to the north-west are the remains of a circular building which has been regarded as a temple, but was more probably a tomb-house; and nearer is a small apsidal structure

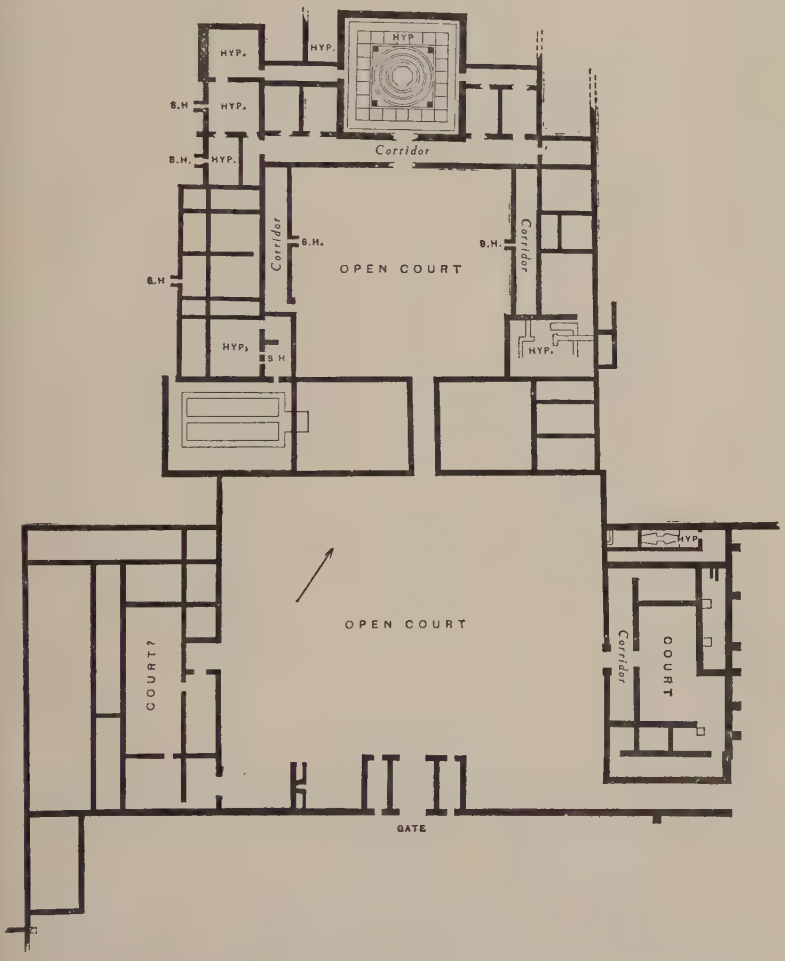


FIG. 47.—Plan of Roman House at Woodchester. After Lysons. (80 ft. to 1 in.)

with a tank which supplied the buildings with water. As it contained an altar it was probably a *nymphaeum*, and will be described in Chapter X.

The grandest known example of a Romano-British house

was discovered at Woodchester, also in Gloucestershire, in 1793,[1] but its full extent was not ascertained (Plan, Fig. 47). It had a spacious base-court apparently about 300 ft. in width, and on its left side were the remains of a large oblong building, probably a barn, and above this, in the corner, a smaller building, shown on the plan. Between this and the second court stretched a wall with a central gateway, which, to judge from the foundations and the fragments of columns and other ornamental details, had the form of a triumphal arch, with a central and two lateral smaller passages, the whole structure being about 43 ft. wide. Passing through this, the visitor entered the spacious paved outer court, about 160 ft. in width. On each side was a large isolated block, each entered by a central portal. That to the right was evidently a bath-house on an unusually liberal scale for a mansion. It had a portico or corridor in front, and enclosed a small court, round the remaining three sides of which were the apartments, the hot rooms being to the north. The opposite block seems to have also enclosed a small court, but its use is uncertain. Within the entrance was found part of a sculptured group, Cupid and Psyche. Across the upper end of this second courtyard was a range of spacious rooms, through which a passage led to the third or house courtyard. The room on the left of the passage was 38 by 46 ft., and the one beyond was somewhat longer; both appeared to have had mosaic pavements, and the floor of the latter room was raised on dwarf walls, perhaps in order to keep it dry. The walls were decorated with fresco, and fragments of marble linings and of statuary indicate their importance.

The inner court was about 100 by 90 ft., and was completely enclosed by the house buildings. Along three sides ran a portico or corridor, into which the rooms opened. Those of the far end formed a symmetrical range with a grand saloon, 50 ft. square, in the centre, the chief feature of the vista. This apartment had one of the most elaborate mosaic pavements found in this country, and will be described in Chapter XII. It was warmed by a hypocaust, and its roof was supported by four columns. The chief rooms of the house were in this and the left ranges; most of them contained decorated mosaic pavements, and many hypocausts. Beyond the former

[1] Lysons, *Woodchester*, 1797.

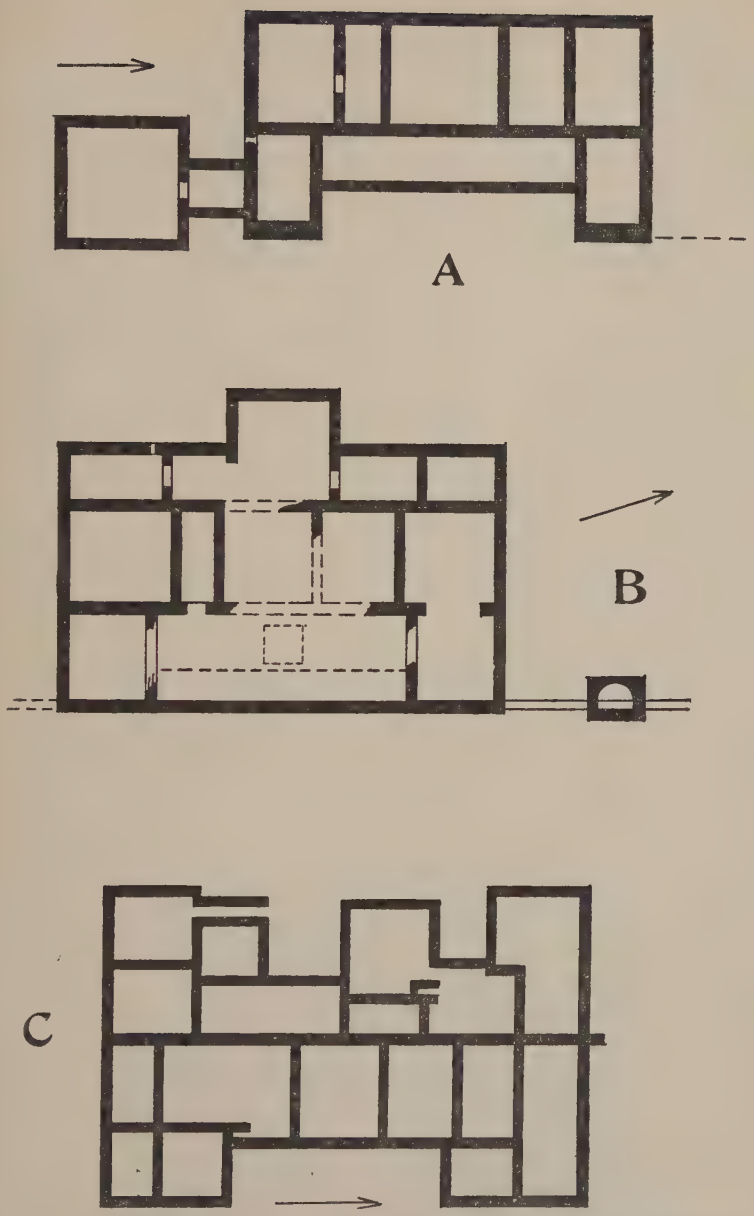


FIG. 48.—Plans of Houses at Mansfield Woodhouse, Chedworth and Ickleton.
(40 ft. to 1 in.)

range were found the cement floors of rooms which were not explored.

The remains of another grand example of a Romano-British residence were discovered at Bignor in Sussex, early in the 19th century.[1] It had a general resemblance to that of Woodchester, but it lacked its symmetrical arrangement. Its courtyards, of which there were two, were even larger. The inner was completely surrounded with a corridor, and the house extended along three sides; and, as at Spoonley Wood, the baths formed a part of the range. At the far end was a room projecting into the courtyard as at Lydney, but the chief rooms appear to have been on the right or north-east side, one of which, a large double room, had a piscina and magnificent pavement, which will be described in Chapter XII, and so faced the south-west.

At North Leigh, Oxfordshire, the remains of a still larger house were discovered in 1816.[2] The buildings extended along three sides of a trapeziform courtyard, and the baths formed part of the range. It is probable that this house, like the preceding two, had a lower courtyard, but this part of the site was not excavated. The plan, as far as we know it, closely resembles that of Bignor; but it is not conceivable that either of these two houses had the grand and imposing architectural effect of that of Woodchester.

We now give two examples of smaller rural houses of the era, each with a single courtyard. The one was excavated at Mansfield Woodhouse, Nottinghamshire, in the 18th century,[3] and the other near Brading, in the Isle of Wight, about a century later.[4] Plans of the houses alone are shown in Fig. 48 A and B. Both, it will be noticed, are singularly compact and symmetrical. The former shows a main structure consisting of a simple row of rooms with a corridor or portico recessed between two wings, and a large semi-detached room on the left, connected by a short corridor. This room, with its connecting corridor, was probably an addition of later date than the main building, and, to judge from the thinness of its walls, was of less elevation.

[1] *Archaeologia*, xviii; xix. *Sussex Archaeo. Collect.*, viii, xi, xviii.
[2] Hakewell, *North Leigh*, 1836. [3] *Archaeologia*, viii, p. 367.
[4] Price, *Remains of Roman Buildings near Brading*. Nicholson, *Roman Villa near Brading*.

Unfortunately the remains of this house were too scanty to allow of the positions of the doors being determined. The Brading house was of similar size and planning. Upon comparing the two plans, it will be observed that the chief difference consists in the presence of a back range of narrow rooms with a central projecting one at Brading. It will also be observed that the large double room (which had a rich mosaic floor) of the latter is represented by two rooms at Mansfield Woodhouse; but it is likely that the intervening masonry there was only a sleeper-wall which did not rise above the level of the floor. Again,

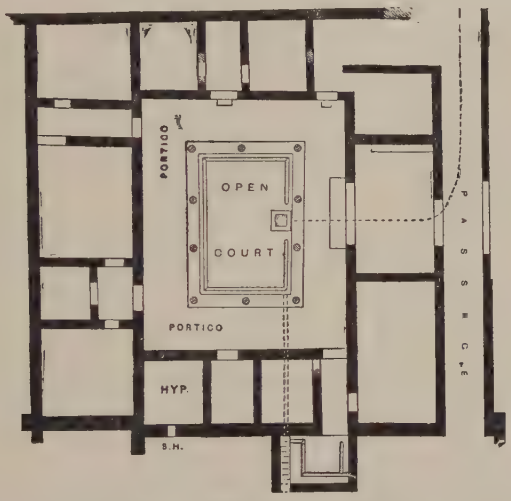


FIG. 49.—Plan of House 3 (*Hospitium?*), Caerwent. (40 ft. to 1 in.)

the relative widths of the corridors appear to be different; but an examination of the Brading plan supplies some inferential proof that the external wall between the wings, which, it will be noticed, is flush with their fronts and not recessed as at Mansfield Woodhouse, did not carry the front of the corridor. The remains of the mosaic flooring of this corridor did not extend to the front wall, and its central ornate 'mat' (indicated by broken lines on our plan) was somewhat set back; so also was a curious subway, which was probably connected with the hypocaust of the large double room. It is not unreasonable to think that the external wall was the revetment of a terrace, and that the actual corridor lay back several feet. If the corridor roof was supported by

wooden posts or pillars (in which case the corridor would be better described as a portico), the indication of these might easily escape detection unless specially looked for.

These differences apart, the plans of these two houses are remarkably alike; and the similarity does not end here. Each house had an eastern aspect, and faced a courtyard wider than itself, which had a large building of barn-like planning with baths at one end, and will be described in the next chapter. C is the plan of a similar but larger house of the type found at Ickleton, in Essex, in 1845.[1]

One of the houses brought to light at Caerwent (House 3)[2] had a general resemblance to one at Lydney, but it differed from all the foregoing examples in its *peristyled* courtyard. This courtyard had a marginal half-round gutter hewn in a line of large sandstone blocks, outside which was the massive stone sleeper of the ten stone columns of the peristyle. These columns, of which several large pieces remained, were of Roman Doric type, about 1 ft. 5 ins. in diameter at the base, and 1 ft. 3 ins. below the capitals. As they were 11 ft. apart from centre to centre, the architrave would be of timber, and the ambulatory roof (covered with stone slabs) would overhang it sufficiently for its rain-water to drip into the gutter below. About the middle of the east side the gutter was discontinued for 8 ft., and in the interval were the remains of a large stone trough. The presence of mortice-holes in the stone sleeper and in the columns showed that the intercolumniations had been screened or fenced off from the courtyard with timber; but probably these were late insertions.

The building was entered from a corridor along the east side, through an unusually wide door. This opened into a large room or hall, on the north side of which was the masonry foundation of a bench, and on the west another wide door gave access to the peristyle in front of the trough. Six doors of ordinary size, mostly opening into passage-like lobbies which may have contained staircases, gave access to the surrounding rooms from the peristyle. These had concrete or mortar floors, and only one, on the south side, had a hypocaust. On that side was also a projecting latrine, 12 by 10 ft., with a substantial flagged pavement, in which was cut a half-round gutter, which, beginning at the north-east, skirted it on the east, south and west, and

[1] *Brit. Arch. Assoc.* iv, p. 356.

[2] *Archaeologia*, lvii, p. 301.

emptied into a trough-like channel along the west side of the chamber. This channel was paved with large tiles, and its bottom

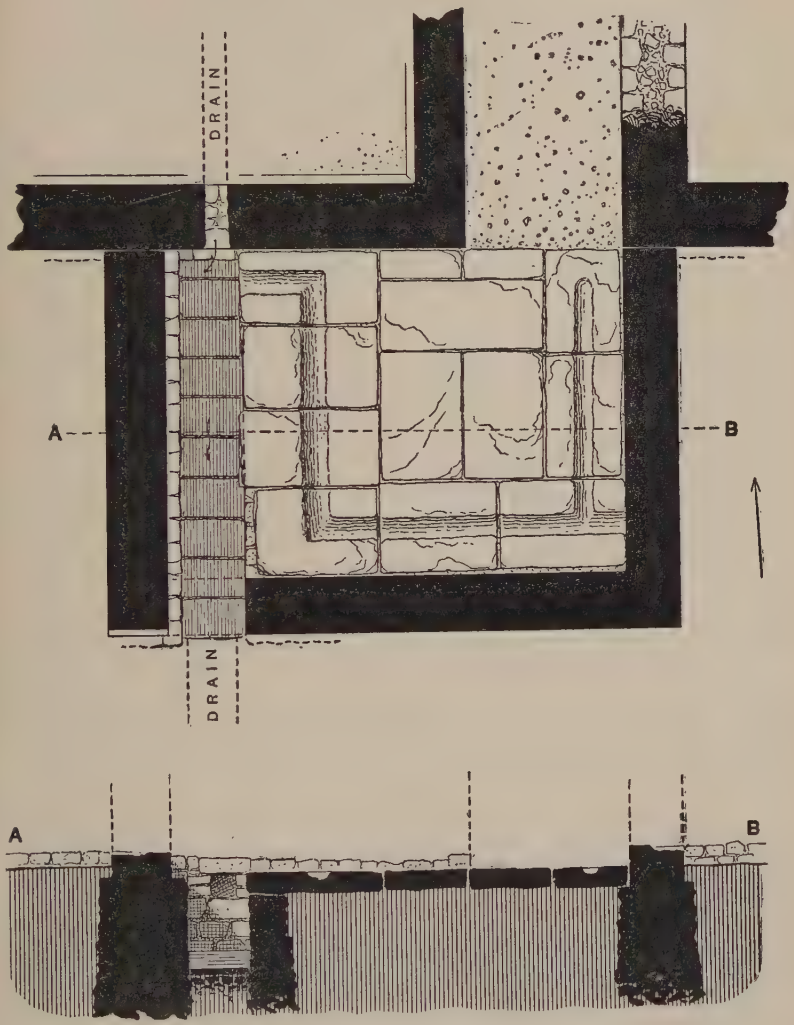


FIG. 50.—Plan and Section of Latrine, House 3, Caerwent. (6 ft. to 1 in.)

sloped to the south, at which end there was an outlet into a drain or cesspit, of which, however, no remains were found. At the north end a drain conveyed water from the courtyard gutter for

flushing it. A regular supply of water was probably derived from the overflow of the trough above-mentioned; and this was certainly fed from a tree-pipe which crossed the entrance-hall and turned to the north up the adjacent passage, the course being indicated by the iron collars or joints and a length of curved lead piping. The plan and section in Fig. 50 will make the details of the latrine clear.

Houses with peristyled courtyards, although frequent in Pompeii and in Italy generally, were most unusual in Britain, in fact, this Caerwent example is the only known one. It is doubtful whether it was a private house at all. In many of its features, especially in the tendency of its rooms to form sets each with its own entrance, it resembles a large building near the south gate at Silchester,[1] which with little doubt was a *hospitium* or public guest-house. This Silchester building was on a much larger scale, with a courtyard 148 by 115 ft., and extensive bath-buildings. Messrs. Fox and Hope suggest that the large house at Lydney was a *hospitium* for the accommodation of the visitors to the shrine of Nodens, and they instance a Gallic parallel.

The examples given above, with the exception of the last, are fairly representative of the Romano-British houses generally. There were other houses of quite a different type of planning, and they will be described in the next chapter. Our method has been essentially a comparative study of plans, but in the process the reader will have gleaned and inferred much about the buildings themselves. Their construction was good and designed to last. The rooms were, as a rule, large and well-proportioned, and those of the ground storeys, at least, had well-laid mosaic, cement, and other durable floors, and plastered walls gaily painted. Unlike the houses of warmer climates, ours had nearly always one or more rooms heated by hypocausts. Glazed windows they had, for broken window-glass is almost invariably found amongst the débris. Upper storeys are a matter of inference rather than direct proof, but everything points to the general use of timber-construction in the upper work; and the roofs, we know, were of substantial tiles or stone slabs. These various structural elements will be discussed in Chapter XI. Meanwhile, it will be best to consider the construction of the

[1] *Archaeologia*, liv, p. 222.

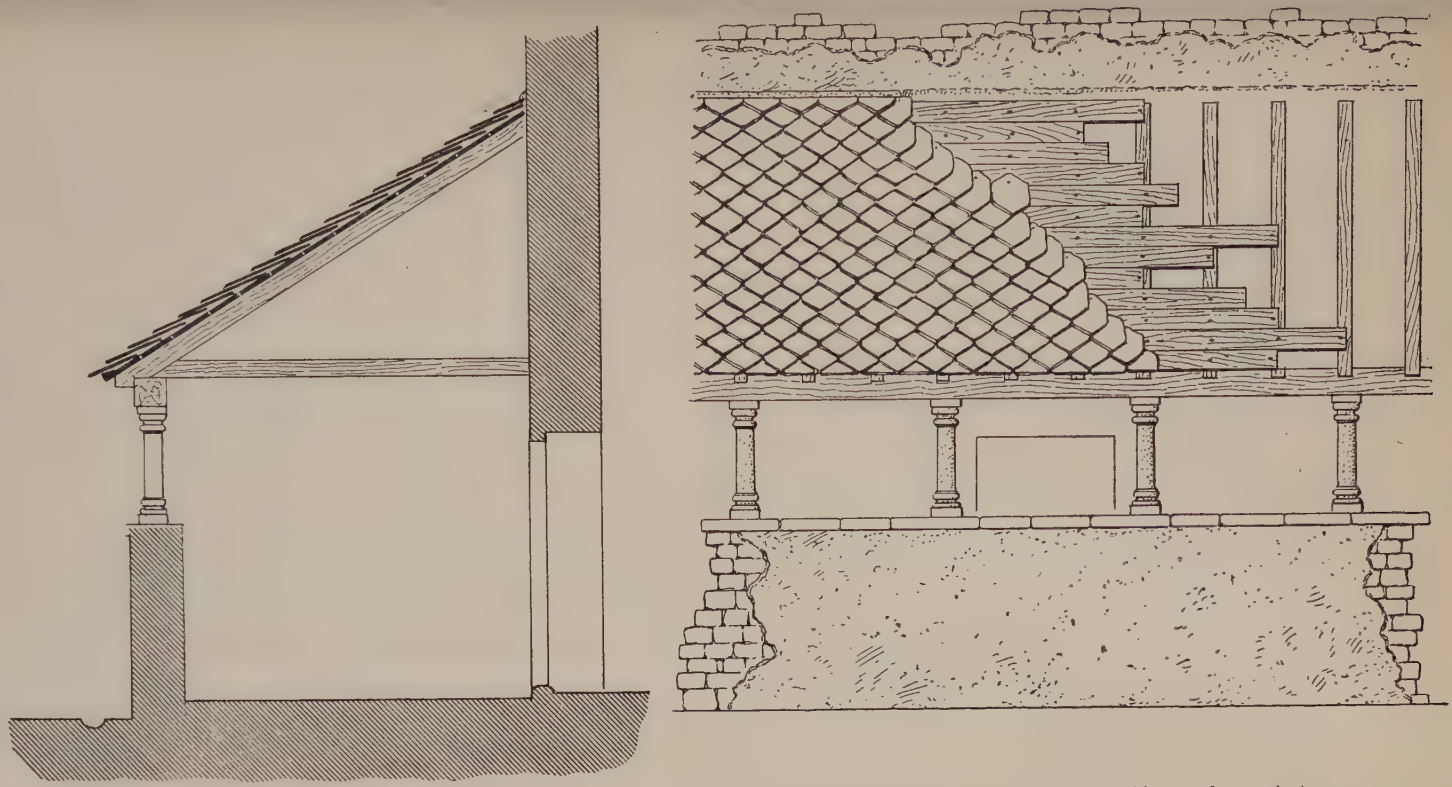


FIG. 51.—Section and Elevation of external Corridor of House. Modified from Middleton's restoration. (About 5 ft. to 1 in.)

corridors and the forms of what we have termed the ' state apartments ' here.

There is little doubt that the corridor was normally, an external feature with a pentice roof, and thus resembled the classical portico and the cloister of the medieval monastery. It differed from the former, however, in its external side having a wall ; but whether this wall was continued to the roof and had windows, as in the latter, is uncertain. Prof. J. H. Middleton suggested in his description of the Spoonley Wood remains,[1] and Mr. Fox inclined to the same view in the *Victoria History* for Hampshire,[2] that the small stone columns of 3, 4 or more feet in length, frequently found upon the sites of the larger Romano-British houses, were a structural element of the corridor front, being placed on a dwarf wall, and supporting the architrave on which the roof rafters rested. Fig. 57 is taken from Prof. Middleton's restoration of the Spoonley Wood corridor, but the height of the wall is increased, as he certainly shows it too low, with the result that his architrave is only about 6 ft. from the ground. The structure thus treated was essentially a classical portico modified to suit a cold climate, as the wall would materially shut out the wind without seriously reducing the light. It may explain the timber screens at Caerwent. The occupants of the building, we can well imagine, found that a peristyle suitable for sunny Italy was unbearably chilly in a British winter. The monastery builders gained the same end by a different method. In the south of Europe the cloisters retained the form of the classical peristyle, from which they were derived ; but in the north, and when glass came into general use, the open arches became glazed windows, almost invariably large so as to admit an abundant light. We thus have two lines of development, and both may have operated in Roman Britain. But the balance of probabilities is in favour of a restriction of the intercolumnar openings, as indicated by Prof. Middleton ; for this would more readily suggest itself to the builders as a means of mitigating the access of cold air, as there is reason to think that the Romano-British windows were small, like the Pompeian, and so would be unsuitable for a corridor where light and some degree of airiness were a first consideration. The presence of dwarf stone columns, however, is by no means general on the sites of the houses, but this does

[1] *Archaeologia*, lii, p. 652. [2] Vol. i.

not militate against the theory considered above, as timber posts may have been frequently used.

We have so far assumed that the corridors were of a single storey, and this, of course, must have been so if the houses were of a single storey; but it is now generally accepted that there were upper rooms, this suggests the interesting question whether these were not reached from upper corridors. Peristyles of two tiers or storeys were not unknown in Italy. But more to the point is the well-known arrangement of the medieval inns, of which several notable examples exist or have existed within the past century, as the 'Tabard,' the 'Bull and Mouth,' and the 'Talbot' in London, and the 'New Inn' at Gloucester. In their planning, these inns are singularly reminiscent of the Romano-British houses. Surrounding, or partly so, a courtyard, was the main building of the inn, each storey with an open gallery upon which the doors of the rooms opened. These galleries were of timber construction, supported along the front on timber posts, or on stone columns below and timber posts above, and covered with a pentice roof or a continuation of the main roof of the building. Both the inns and the Romano-British houses seem to have been derived from the same source—the peristyled house of the Orient; but there is no evidence that the second had the galleries. Indeed, slender dwarf columns,[1] as in Prof. Middleton's restoration, were hardly strong enough to carry a gallery in addition to a roof, unless they were augmented at intervals by pier-like breadths of the wall. On the other hand, the columns of the Caerwent peristyle were large enough to carry more than one gallery, in which case we have a Romano-British *hospitium* closely resembling a medieval inn.

In the Roman houses of this country, the chief rooms were generally contiguous to one another, and in many of the larger establishments they occupied a wing or a range. It is impossible to identify the uses of these rooms; but there was usually at least one with a hypocaust, and it is customary to speak of these as 'winter rooms'—a very doubtful term, as the presence of a hypocaust would not render them less useful for summer use. But in many of these mansions there was one large room of

[1] Since the above was written, the fragments of several dwarf columns have been found in the corridor of House VII. N. at Caerwent, apparently where they fell, which goes far to confirm Prof. Middleton's theory. *Archaeologia*, lx, 456.

peculiar form, which from its position, size, and usually elaborately decorated pavement must have been the principal apartment. We have already referred to several as 'state apartments,' for want of a better term. They were, so to speak, double rooms communicating with one another by a wide opening between a pair of piers or pilasters; and it is noticeable that the pavements of the two divisions, which were always of unequal size, were often of different design.

A simple example, consisting of a long oblong room divided by a pair of pilasters, was found at Chedworth; and rooms of this form may be seen on the plans of Houses 2, XIV and 1, VI, at Silchester. In House 2, N. at Caerwent, the smaller division was semi-octagonal, and in another, at Caerwent and at Bignor, it was semicircular. But it was more usual for the larger division to be wider than the smaller one, as those at Spoonley Wood, Caerwent, and Brading already noticed. At Lydney and in House 2, S., at Caerwent, the corridor passed between the two divisions, the whole thus taking the form of two rooms, one on either side of the corridor, with their wide openings facing one another, the smaller room projecting into the courtyard. Two more elaborate examples in Houses 1, VIII, and 1, XXVII, at Silchester, were referred to on page 150. In both, the one division had a large apse entered between two pilasters, and the other was over a hypocaust; but in the second example the opening between the two main divisions was flanked with columns, one on each side about 2 ft. from its contiguous pilaster.

These double rooms have been described as *tablina*, as *triclinia*, or dining-rooms, and if without a hypocaust, as summer dining-rooms; but whatever their use, it was certainly an important one, and perhaps every house had a room that served the purpose, but not necessarily divided by a wide bay. Still, these double rooms may have been frequent, as it would be in accordance to Roman construction for the foundation of the pilasters to cross the room as a sleeper-wall, which in the absence of traces of the pilasters might easily be mistaken for the bottom of an ordinary partition. That the openings between the pilasters were provided with curtains is highly probable. They would not only be useful for shutting off part of the apartment when the whole was not required for use, but when thrown back would add artistically to the general effect. One can with little effort

of the imagination form an idea of the Silchester double room last referred to. It was nearly 40 ft. long and 20 ft. broad, and the pilasters and columns, with the architrave they supported, must have produced a pleasing break in the length; while the curved alcove equally agreeably contrasted with the straight lines of the main structure. Add to these architectural features the strong patterns and quiet colours of the pavement, and the lighter and brighter tones of the walls, and little of importance is left to complete the picture except the windows; but unfortunately we know nothing of these.

CHAPTER VII

HOUSES OF THE 'BASILICAL' TYPE. COTTAGES

IN the last chapter we described a number of Romano-British houses, which, whether small or large, simple or complex, all agreed in the presence of a corridor or cryptoporticus. These, it was pointed out, represented the prevailing type in this country—the Romano-British house *par excellence*. In the present chapter it is proposed to consider some houses of another type, as also the humbler abodes of the poorer classes.

'BASILICAL' HOUSES

The remains of a few remarkable houses, if houses they can all be called, have been found mostly in the southern counties, which present a fundamental difference of planning from that of the corridor class. Little is known of them; but it is observable that none have been found in or near the towns. They are mostly associated with rural mansions of the ordinary type, and we have incidentally referred to three of them; several, however, have been found quite isolated in this respect. Some appear to have been of the nature of barns, rather than houses: others were certainly used for human habitation.

In Fig. 52 three plans of these buildings are given. The first, the building at Spoonley Wood already referred to, is a simple example and serves as a key to the rest. It was not completely excavated, but sufficient was disclosed to give a general idea of its construction. Its two rows of pillar-bases gave it a basilical character, hence we may conveniently apply the term 'basilica-type' to this class of buildings. Each base rested upon a rough foundation, and consisted of a cubical block

of stone with a mortice-hole to receive the tenon of a wooden post or pillar. No mention was made of its floor; but it was regarded as a barn or granary by Prof. Middleton.

The second was excavated at Ickleton,[1] in Essex, in 1845–7, and it closely resembles the foregoing, and, like it, was associated with a house of the usual type. It presents, however, the additional feature of three internal walls, stretching between the side of the building and three of the pillars, thus dividing a portion of the 'aisle' into two cells or rooms. We are not informed whether these walls were coeval with the main structure, or were a later insertion. Many stone roofing-slabs were found, but the late Lord Braybrook, in his description of the remains, considered that

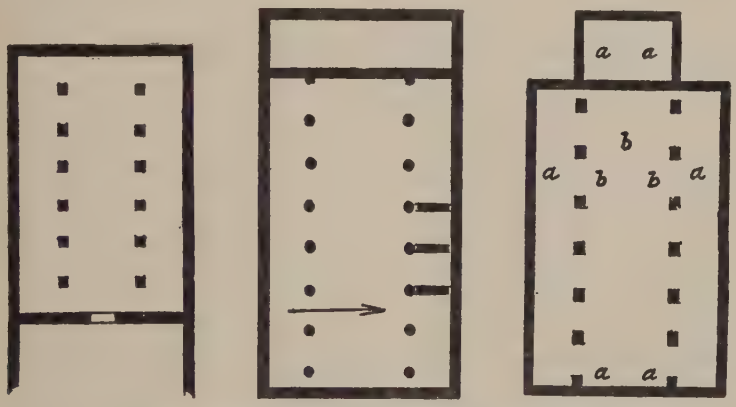


FIG. 52.—Basilical Buildings at Spoonley Wood, Ickleton, and Chesterford. (40 ft. to 1 in.)

the central area had not been roofed; he also regarded the building as a temple or a basilica, but nothing was found to corroborate this or to throw light upon its use.

The third example was discovered at Castlefield,[2] near Andover, in 1867, and it supplies some further particulars. The floor was of rammed flint and chalk, and stone roofing slabs were abundant. No window-glass or painted wall-plaster was noted. More important were the remains of several open fireplaces or hearths and of furnaces, indicated by *a* for the former,

[1] *Brit. Archaeological Assoc.* iv, 366; *Arch. Jour.*, vi, 15.
[2] *Ib.*, xxiii, 268.

and *b* for the latter, on our plan. Nothing was found to suggest that these had chimneys, so it is probable that if the whole space was roofed, the smoke found an exit through one or more holes in the roof. It was regarded as a *deversorium*, or inn; but this it could hardly have been, as it was remote from any important road or large village of the Roman era. Nothing was discovered to indicate whether it was associated with a house, but it is possible that further investigation may bring the remains of one to light. At Holbury, in the same county, a similar building had three hearths, one at each end, and one near the side.[1]

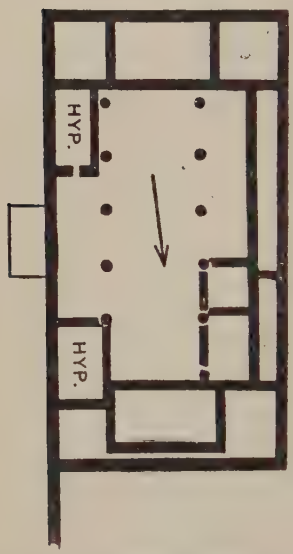


FIG. 53.—Basilical House at Clanville, near Andover. (40 ft. to 1 in.)

In the next examples, the primary planning is less evident at first sight, in consequence of the numerous internal divisions. Fig. 53 was discovered at Clanville,[2] in Hampshire, in 1897. Its dimensions were 96 by 52 ft., and it stood at the south-west corner of a large yard, which had traces of other buildings on its other sides of apparently a subordinate character, as "necessary farm buildings" and servants' quarters. According to Mr. Engleheart, the explorer, the rooms of the first-mentioned and apparently chief block "lay around a small court with a peristyle, of which a double row of stone bases still remains almost entire, six a-side. But this original peristyle had been curtailed by building the walls of the present rooms over the three northernmost bases on either side,[3] the masonry not only surrounding but actually covering the bases." The large central room at the south end of the building had a rich mosaic floor, while the corresponding room at the opposite end had a plain grey one. The two adjacent rooms in the western 'aisle' had striped and chequered mosaic floors; while external to this 'aisle' was a narrow corridor-like space. On the opposite or eastern side, the

[1] Wilts, *Arch. Jour.*, xiii, 33, 276.
[2] *Archaeologia*, lvi, 2.
[3] ? On the western side only.

two oblong rooms, the one towards the north and the other towards the south, were heated by hypocausts, while midway between was apparently the entrance to the building through an external lobby or porch, of which the pavement remained. The northern part of the columned space was of rammed chalk; elsewhere the floor was of clay. Painted wall-plaster and window-

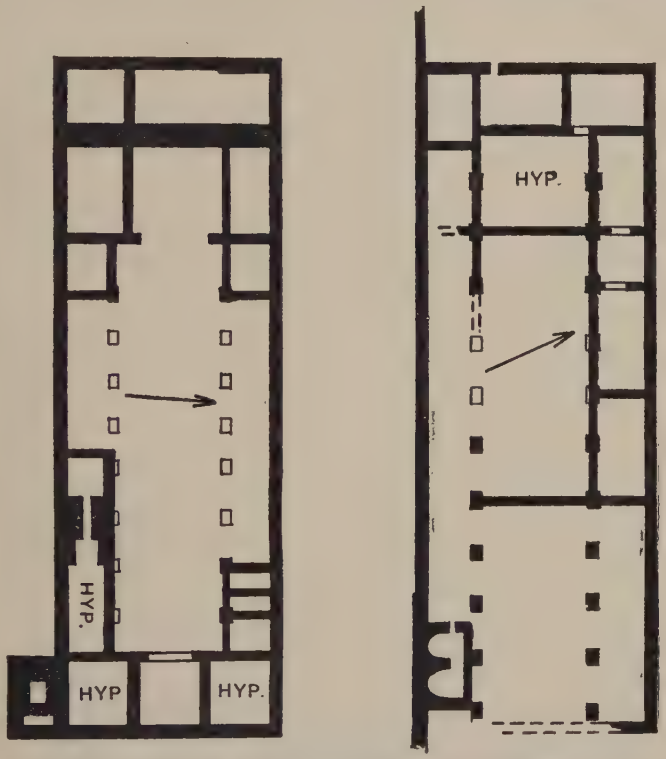


FIG. 54.—Basilical Houses at Mansfield Woodhouse, and Brading. (40 ft. to 1 in.)

glass were abundant. From Mr. Engleheart's description it is clear that the internal walls of the 'aisles' were not parts of the original structure. And it is also clear that however we regard our first three examples, this of Clanville has strong claims, in its mosaics, wall-plaster, and window-glass, to be regarded as a house of no mean order.

In Fig. 54 are given the plans of the buildings already referred to on pages 164–6, as associated with the Brading

and Mansfield Woodhouse mansions. Both were much larger than the last example ; and they closely resembled one another, which is all the more interesting from the fact that their relative positions in the two groups were identical, and the houses to which they appertained were also similar to one another. The upper ends of our two plans are the ends nearest the houses. The remains of the upper half of the Brading building were better preserved than those of the lower half, where little else than the foundations were left. The pillars were represented by their foundations of rough concrete from 4 to 5 ft. long, and upon three of these towards the upper end of the right-hand row the oblong bases still remained. It is clear that the pillars were as nearly as possible 10 ft. 8 ins. apart (or 11 Roman feet) from centre to centre. This measurement divides the building internally into twelve bays. If the rows of pillars extended the full length of the building, twelve bays would require eleven pillars to each row, whereas the foundations of only seventeen were noted. Both the report of the explorers and their plan make it clear that most of the pillars in the upper two-thirds of the building were removed upon the erection of the walls along their lines, for the remains of these walls covered several of their foundations ; and it is probable that the five presumably existing but unobserved foundations were overlapped by the concrete floors of the rooms, and so escaped discovery. Their probable positions are indicated in outline on our plan. The lower one-third of the building was devoid of rooms except for a small double chamber with two apses, which was built within the aisle. This had a hypocaust, and was probably connected with one or more other rooms of which only vague traces remained, immediately beyond the lower end of the main building, the whole forming the baths. The building was entered from the garth by what appears to have been a double doorway of noble proportions, about the middle of its left side. The two portals, which corresponded with two bays, apparently opened between two columns, of which a portion of one was found near, and the massive foundations remained. The building was roofed with stone slabs, and several of the rooms had concrete floors and walls with painted plaster, and in one or two of them much broken window-glass. The middle room at the upper end had a pillared hypocaust.

In the Mansfield Woodhouse example only two of the

pillar-bases remained, and these were large and well-shaped blocks with shallow recesses in their tops. They puzzled Major Rooke, the explorer, who, seeing no use for them, finally concluded that they were altars! The conjectural positions of the rest of these bases are shown in outline. As at Brading, most of the rooms had concrete floors, and painted wall-plaster was abundant. The room at the lower right-hand corner was heated by a hypocaust; and on the opposite side were the baths, also similarly heated, and they had an external cold-water bath. The central space was regarded as a court; and no indications of an entrance were noted, but presumably it was in the same position as at Brading.

At Carisbrook, a remarkably fine example of one of these buildings was partially uncovered in 1859.[1] It was of similar dimensions and plan to that of Brading, and had baths in a similar position, while its entrance was in the side as at Clanville, which it surpassed in its array of decorated and plain mosaic floors. A similar building with rooms paved with plain mosaic has recently been opened out at Petersfield.[2] It occupies most of the north side of a large courtyard, which has the remains of baths on its west side and a narrow building on the east side. In buildings of the type in the outer courtyards at Bignor and Hartlip,[3] the pillars arose from two lines of sleeper-walls.

These buildings suggest questions which can only be imperfectly answered in our present state of knowledge. One point, however, is clear enough—they belong to a very different type from that of the corridor-houses, and it is impossible to conceive that the one could have been derived from the other. The rooms are divisible into two classes: one or more at one or both ends, which appear to have formed part of the original structure, and others constructed in the 'aisles,' evidently insertions. If the central space was open to the sky, we may regard these structures as peristyled courts with portions of their peristyles converted into rooms; but the similarity of the plans to those of the great medieval barns is so striking that one is tempted to regard them as their prototypes, and to have been similarly roofed over. Rammed chalk or clay would scarcely form a satisfactory floor open to the rain; and surely in the larger

[1] *Collect. Antiqua*, vi. 126.
[2] *Arch. Jour.*, lxvi, 33.
[3] *Collect. Antiqua*, ii, 9.

buildings some indications of gutters to catch the drip from the roofs, and of drains to convey away the rain-water from the open area, would have been found.

While several of these buildings showed no signs of having been used as human habitations—as that at Spoonley Wood, for instance—others were manifestly houses, wholly or in part. Some were associated with houses, to which they appear to have held a subordinate relationship, and others were not so associated. The Clanville and Petersfield examples, for instance, seem to have been the chief building of the groups; and it is noteworthy that in their mosaic floors they were comparable with the better class of the rural residences of the time. The Carisbrook example was larger and even more sumptuous; and nothing was discovered to warrant the belief that it was an outbuilding of a large house of the ordinary type. Major Rooke surmised that the two buildings at Mansfield Woodhouse were related to one another as *villa urbana*, the residence of the proprietor, and *villa rustica*, where his ' villicus,' or bailiff, and other farm dependents lived, or, as we should say, ' house ' and ' home-farm.'

The similarity of these obscure buildings to a widespread type of farmhouse in ancient and medieval times, which still survives in Germany, Holland, and elsewhere, will perhaps best help to a solution. For a succinct description of these houses, the reader is referred to Addy's *Evolution of the English House*. One description in particular, which he gives of a Saxon farmhouse from the German writer Meitzen, so admirably elucidates our present subject that we give the quotation *in extenso* :—

" Its chief characteristic is that it unites in one body the space necessary for a very considerable establishment under one and the same roof, and therefore represents an extremely large building. Its ground plan is that of a basilica with nave and aisles. The middle always forms the so-called ' floor ' (diele) (*a*), which is entered at the gable end through a large gate, and which goes through the whole house as far as the dwelling-rooms at the end. . . . In the forms of the Frisian and Saxon house generally in use, the horses (*b*) and cows (*c*) are always so placed on both sides of the ' floor ' that they are foddered from it. Over the ' floor,' over the cattle stalls, and over all the other rooms up to the ridge of the roof, the corn harvest and hay harvest are stored on boards and poles laid between the joists. In the Saxon

house (Fig. 35) the background of the 'floor' ends in a low hearth (*d*), on both sides of which are the bedsteads of the family, arranged in a kind of narrow and rather high cupboards, whilst over against them, and near them, the men-servants sleep over the horses, and the maids over the cows. To the right and left of the hearth extends the space used for the household, which is uninterrupted as far as the two opposite side walls of the house. This part of the house is lighted by high and broad windows, and on either side a glass door forms an exit into the open air. Usually, too, the well is inside the house at the side of the hearth.

"Thus the master of the house can superintend the whole management of the household from the hearth and his bedstead, and hear every sound. So he exercises the fullest supervision, and so long as the smoke of the great hearth fire, which had no

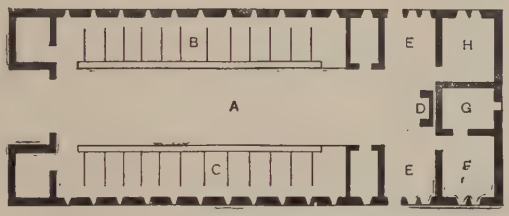


FIG. 55.—Plan of Saxon Farmhouse.

chimney, permeated the whole building, insects and the bad stench of the cattle were driven away, so that not till the most recent times was the need felt for building additional rooms behind the hearth-wall (heerdwand). Of these rooms, *f* is usually the best room, *h* the living-room, and *g* a store-room, kept dry by the fire on the hearth."

This Saxon farmhouse is perhaps exceptional for its large size and symmetrical proportions; but there is no question of the former wide diffusion of its type. Galen described peasants' houses, which similarly combined dwelling with farm offices under a common roof, in Asia Minor in the second century of our era; and Addy sees the survival of the class in our own country, in the Yorkshire 'coits.' Lange, after describing similar buildings in Schleswig, Hanover, and Westphalia, thus concludes: "The great covered middle room with smaller rooms around it, and with the dwelling-rooms at the back, divided into three parts,

seems to have been a common type of all the dwelling-houses of the Aryan peoples at a certain stage of their evolution."

The resemblance of the plan of the Saxon farmhouse to those of the Romano-British buildings we have discussed, is apparent at a glance. It will be observed that the farmhouse, like most of these, has rooms at each end beyond the limits of the basilical portion ; and that in this portion, besides the stalls for the beasts, there are rooms and spaces carved, so to speak, out of the aisles ; also, that by sacrificing some of these stalls it would be an easy matter to provide additional rooms. Analogy could scarcely supply a stronger argument in favour of the kindred Romano-British buildings having served a similar, but not necessarily identical, purpose. We can, for instance, well imagine that the Spoonley Wood example was used for farm purposes—for the beasts in winter and the storage of their fodder, also for the storage of grain, which could be thrashed on the ample 'floor'—the farm-hands having accommodation in a wing of their master's residence. We can well imagine that the dependents themselves had their quarters in the similar buildings at Brading and Mansfield Woodhouse ; and in addition, the proprietors and their families, at Clanville, Petersfield, and Carisbrook.

If the reader will now return to the early Pompeian houses, he will probably share the writer's conviction that these also were of the same type, only modified to suit town conditions. Mau's typical plan on page 139, shows an oblong atrium with passage-like entrance between two rooms at one end as in the Saxon house. Within was the primitive hearth, and along the sides, the bedrooms, occupying the positions of the stalls in that house. Beyond these were the *alae* or wings of the atrium, and behind the hearth, the *tablinum*, which originally contained the master's bed, with a room on either side, all of which have their counterparts in the Saxon house. The origin of the Pompeian *alae* has puzzled antiquaries, but the Saxon plan suggests a solution. There, these recesses are each terminated with a window and door. Their purpose is to admit light about the hearth, and to provide spaces for various household operations and convenient means of ingress and egress. It is probable that the Pompeian *alae* had a similar purpose, but that the building of house against house necessarily led to the abandonment of the glazed doors

or windows, and compelled the builders to compensate the loss of light by enlarging the smoke-hole.

It will not be altogether irrelevant to briefly consider a number of small buildings that have been opened out at Silchester, especially along the street leading to the West Gate.[1] They were all of one type, and this has some resemblance to the basilical structures described above. The characteristic feature of their plans, of which three are shown in Fig. 56, is their division into a large space next the street, and a smaller space behind divided into rooms. It is almost certain that the former was roofed, for in several of them were found blocks of sandstone

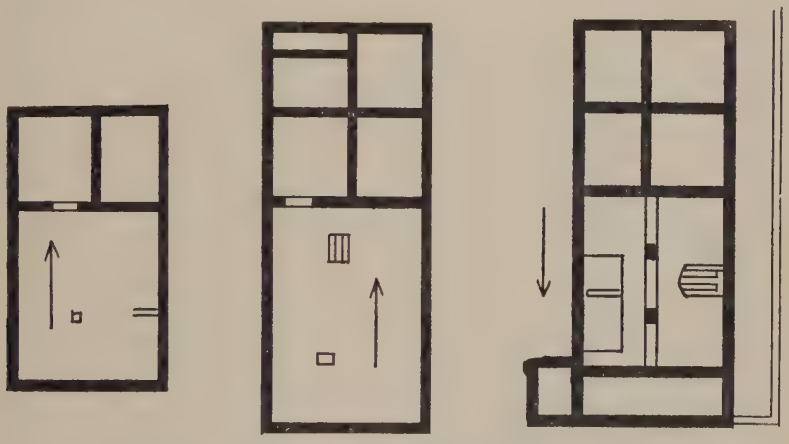


FIG. 56.—Plans of Workshops, Silchester. (After Hope.) (40 ft. to 1 in.)

which might well have been the bases of posts; but in our third plan,[2] which indicates a building of a type, larger and more elaborate than the rest, there is a central sleeper-wall with two bases for pillars or posts that can only be interpreted as the supports of a roof. The rooms at the back were in some instances floored with plain mosaic or with mortar; in others there was inferential evidence for timber floors. We may reasonably assume that these rooms were of two storeys, and that the whole structure was under a continuous roof.

In most of the large anterior spaces were found remains of furnaces for heating boilers, and other indications that some

[1] *Archaeologia*, liv. 440. [2] *Ib.* lx, 150–2

industry was carried on in them; and Messrs. Fox and Hope give strong reasons for thinking that this was dyeing.[1] There is no evidence that they were other than workshops; but it is quite possible that some of them were also dwellings. Several buildings that resemble these Silchester workshops have been discovered at Caerwent, and one—House 13, N.—is distinctly of the basilical type,[2] only, instead of having two rows of roof-posts, it had a single one nearer one side of the building than the other.

COTTAGES

The remains of many small dwellings have been discovered, but it is comparatively rare that their periods have been determined. The majority have been described as prehistoric, and there is no reason for doubting the general correctness of this conclusion. Others have been assigned to the Roman period, and others again to the post-Roman. In plan and construction, these ancient dwellings varied greatly, and little attempt has been made to classify them or to ascertain their distribution. Had this been done systematically, much light would have been thrown upon the origin and development of their types, but it is questionable whether it would have provided a satisfactory means of determining the age of individual examples. The presence of distinctively Roman structural work is, of course, the best evidence that the building which contains it was erected or modified in Roman times; but its occurrence upon cottage sites has been exceedingly rare. Under these circumstances we have to mainly rely upon the presence of chance potsherds and other articles of determinable age. If these are unmistakably of Roman age, we may assume that the site was occupied during or shortly after that age; but their absence does not prove the contrary.

From the slightness of these cottage remains, it is hardly to be expected that the exploration of any one example, no matter how carefully executed, will yield a reasonably complete plan. Resort must be had to the comparison of many of these plans; but, unfortunately, not only do the published descriptions lack preciseness and detail as a rule, but they are rarely illustrated with plans and drawings of the structural remains. Lieut.-

[1] *Archaeologia*, liv, 472. [2] *Ib.* lx, 123.

General Pitt-Rivers' exploration of a village site on Woodcuts Common in Cranbourne Chace, however, is a notable and grand exception. The excavation of a Romano-British settlement, near Wetton in Staffordshire, by the late Mr. Samuel Carrington, between the years 1848 and 1852,[1] is an example of a most promising work rendered of little value through the absence of plans.

It appears from Mr. Carrington's account that this settlement was protected by earthen banks. The sites of the dwellings were indicated by rude pavements of limestone or floors of stiff or clayey earth, one of which is described as "burnt very red and hard by repeated fires"; and these occurred "in rows or streets, as well as standing detached." The shapes and sizes of these floors are rarely stated, but one pavement is described as about five yards square. Indications of fires were numerous. "Near the first place we examined, we found occasional depressions in the floors having a few stones round them, which, from their containing ashes, charcoal, bits of calcined bone, fragments of pottery, etc., we at once concluded to be fireplaces." In other places the domestic fires appear to have been lighted upon the floors, or upon hearths of limestone flags. Elsewhere, "we observed a low wall . . . in which was inserted a hard slab of gritty slate, about an inch thick, that had evidently been used as a bakestone, as it projected out from the wall so as to receive the heat of the fire kindled beneath it, the traces of which were obvious both upon the stone itself and the ground beneath it, whereon lay a collection of ashes and charcoal."

This is the only reference to a wall, and probably its purpose was simply to carry the projecting slab. While it is possible that some of the houses were partly of stone, to judge from the large quantity of this material which cumbered their sites, Mr. Carrington gives evidence that others were of wood. In the vicinity of this piece of walling, for instance, were "holes nearly filled with flat stones, set around the middle on edge, so as to leave a small place in the centre, which was found to be filled with earth and a dark-coloured powder as fine as vegetable ashes. Three of these were observed; two of them being on one side of the bank, and the other on the opposite side over against one of the others. They were between three and four yards asunder,

[1] *Ten Years' Diggings*, pp. 193–203.

and were respectively about a yard deep. We concluded that they had been prepared for the reception of strong posts or beams of wood, that formed the corners of the house, which had been inserted in the ground and then wedged in with flat stones, so as to stand firmly in the desired position." Several similar holes were found in the vicinity. Nothing seems to have been observed to throw light upon the manner in which the spaces between the posts were filled in; and from the absence of any reference to roofing-tiles or shingles, we may conclude that these houses were probably thatched.

The relics associated with these remains were, with few exceptions, of simple and homely character. The pottery was "of various degrees of refinement" — some of it being "no more artificially wrought than the sepulchral urns of the ancient Britons." But, on the whole, they seem to have been very distinctly Romano-British, and to have convinced Mr. Carrington that the settlement belonged wholly to that period. Very few coins were found, and the earliest was one of Gallienus.

We now turn to Lieutenant-General Pitt-Rivers' excavations on Woodcuts Common.[1] His plan presents a tangle of intersecting ditches and banks, with numerous pits and other remains, which, except for the thoroughness and systematic character of the exploration to which they were subjected, would have been extremely difficult, if not impossible of interpretation. By a careful comparison of the 'finds,' however, he was able to prove that the village dated from late pre-Roman times, and to indicate the various changes it passed through before its final stage was reached in late Roman times. To describe the village as a whole and to unravel its history would be foreign to our present purpose: we must confine ourselves to the evidence it affords of the dwellings it contained.

The most notable features of the site were the curious pits, of which ninety-five were found. They varied from 3 ft. 6 ins. to 10 ft. in diameter, and from 3 ft. 6 ins. to 9 ft. in depth; some cylindrical, others in the form of a truncated cone, larger at the bottom than at the top; and some, again, had lateral pits with higher bottoms, attached like side chambers to them. They were cleanly cut in the solid chalk, and many of them showed traces of clay linings. Various uses have been suggested for

[1] *Excavations*, i, p. 7.

these pits, but Pitt-Rivers came to the conclusion that they were the cellars or store-pits of houses. From a comparison of the potsherds and other objects found in them, with those diffused near the surface of the ground generally, he was able to prove that these houses were of pre-Roman origin, and that many of them continued to be used in Roman times. The exploration failed to throw light upon the shapes and sizes of these houses, but the pits furnished some hints as to their construction, in the occasional fragments of clay-daubing of wattle-work found in them.

The Romano-British houses were in even worse plight, as only several were marked by structural remains *in situ*, and these for the most part could only be regarded as of this period from their position, not from any intrinsic characteristics. The later village spread beyond the earlier in several directions, and naturally the 'finds' of these portions were mostly of the later period. In one of these regions (the 'North-East Quarter') were found several "narrow trenches formed up at the ends with flagstones of Purbeck shale—which, from the traces of ashes and fire about them, appeared to be hearths"; these, from their position, were presumably Romano-British. Four 'supposed hypocausts' were also found, three in the overlapping regions and one outside the village altogether. These were undoubtedly Romano-British, but three of them would be better described as T-shaped furnaces, such as have been found at Silchester, Caerwent. The fourth passed round the four sides of a square, the outer sides being about 9 ft. long, and would admirably serve to heat a room 10 ft. or more square; but no indications of the walls of such a room were found.

For some idea of the construction of the Romano-British houses of this village, we have to turn to the loose structural remains. The 'finds' generally proved that the villagers became more or less Romanized, also that the North-West Quarter was, to use Pitt-Rivers' words, the 'fashionable end' of the village. Here were found fragments of painted wall-plaster, proving that although mosaic and concrete floors were absent, the walls of some of the rooms were in Roman taste. A number of these pieces had "distinct marks of wattling at the back, which showed that the plaster was about one inch thick, and was smoothed to a perfectly flat surface before being painted. There were also

the round impressions of stakes, and the wattles appear to have been about a quarter of an inch in diameter. A few fragments had the impressions of flat laths upon them. It may be conjectured that the houses were built or partly lined with daub and wattle, and coated with lime and mould, mixed in some cases with small fragments of flint." Many fragments of both stone and red clay roofing-tiles were found, and their distribution proved that this quarter contained most of the buildings so roofed. The distribution of iron nails also corresponded, and they occurred under conditions which connected them with the later rather than with the earlier remains. The paucity of these remains in the central and older part of the village renders it probable that the later dwellings there were of humbler type. Indeed, it is a question whether the earlier dwellings were completely replaced by later, for the fillings of many of their pits contained Romano-British pottery and other relics, showing that they continued to be used after the advent of the Romans.

CHAPTER VIII

BATHS: DOMESTIC AND PUBLIC

THE high estimation in which bathing was held wherever Roman civilization penetrated, is well known, but the popular notion that every house had its bathrooms, and that in every hypocaust is seen their remains, is not borne out by facts. Undoubtedly the hypocaust originated as a method of heating baths, and in southern lands this continued to be its almost only use; but in colder climates it was a common means of heating one or more of the living rooms. Most country mansions, it is true, had their baths, attached or detached, but this was not so at Silchester. That town had public, and at least one proprietary, baths; and we have it from ancient writers that the Romans preferred public to private bathing. "It is not easy for one living under present conditions to understand how important a place the baths occupied in the life of antiquity, particularly of the Romans under the Empire; they offered, within a single enclosure, opportunities for physical care and culture and leisurely intercourse with others, not unlike those afforded in the cities of modern Europe by the club, the café, and the promenade." [1]

Some of the public baths of Rome were on a colossal scale. Those of Caracalla, with their *palaestrae* and courts for gymnastic exercises, and their internal porticoes, *exedrae*, and groves, covered a site about 1100 ft. square, exclusive of the great water cisterns or 'castella,' and were capable of accommodating 1600 bathers at a time; while the baths of Diocletian were even larger and are said to have had double the accommodation. It need hardly be said that the largest Roman public baths that have been opened in this country are but distant echoes of these palatial edifices; but large or small, public or private, the fundamental principle of all is the same.

[1] Mau, *Pompeii*, p.180.

Vitruvius, Pliny, Lucian and other ancient writers have left descriptions of the baths of their times, which, although unintelligible here and there, give a general idea of their arrangement and process. It is unnecessary to quote these writers here, as the gist of their statements is to be found in easily accessible works.

The Oriental baths of the present not only represent the Roman, but are directly derived from them. The process is not quite identical in different eastern countries, but a short account of it will furnish a better insight into that of the ancients than the statements of their contemporary writers, and for this reason a digression will be pardoned. The following particulars of a typical Turkish bath are abbreviated from the late Mr. Urquhart, to whom we are indebted for its introduction in our midst :—

The essential rooms are three in number. The first to be entered is a spacious hall, the ' mustaby,' with domed roof open in the centre to the sky. In the centre is a fountain ; hard by a stall for the supply of coffee and pipes ; and around the sides, a low platform partitioned off into divans, each with one or more couches. In one of these compartments the bather undresses and dons his bathing costume, which consists of three towels, one wound round his loins, another round his head turban-wise, and the third thrown over his shoulders. Then, with wooden pattens on his feet to protect them from the heat of the inner apartments, he enters the first of these, a small dark room moderately heated. Here, reclining on a mattress, he sips coffee and smokes. As soon as a gentle perspiration is induced, he is conducted into the third and hottest room, the steamy atmosphere of which accelerates the process. About the middle of this room are marble slabs, and around the sides marble basins, each supplied with hot- and cold-water taps. Divested of his head and shoulder towels (the one being spread upon one of these slabs and the other rolled into a pillow), the bather is laid upon a slab, and then commences the shampooing process, which consists of an intricate kneading of his muscles and exercising and stretching of his joints. This accomplished, he is led to one of the basins, where he is submitted to the friction of a camel-hair glove, which removes the dead matter of the skin with the aid of hot water. Immediately after, he is lathered with soap

applied with a wisp of lufa—the woody fibre of the palm—and finally the whole body is rinsed with a bowl of warm water. Reinvested with clean, dry towels, the bather now returns to his couch in the mustaby, where coffee, fruit, and other refreshments are offered him. As he enters this apartment still perspiring, the cooling process is a protracted one, requiring at least one change of linen and the aid of fanning. When completed, he dresses, and the ' bath ' is finished, the whole operation taking from two to four hours.

There is an important difference between this and the practice among us. In the one, the cooling is effected by resting in a cool atmosphere; in the other, it is hastened by a cold douche or plunge. There is also another difference. In Turkey the air of the hottest room is purposely charged with moisture; in England, there is a preference for a drier heat. This has an important bearing upon the temperature employed, as the drier the atmosphere, the higher is the requisite heat. Water scalds at 110° and steam at 120°; but the dry air of a kiln many degrees above the boiling-point of water can be borne without discomfort. In both these respects—in the cold douche or plunge and the relatively dry atmosphere of the hottest room—the English practice approximates to the Roman.

In this country, the Turkish baths vary greatly in arrangement and complexity. One for domestic purposes may consist of only two rooms—the first, a ' cooling-room,' and the second, a combined washing- and hot-room. Ventilation is specially important in the cooling-room, as it is essential that the bather should have his whole body laved with an abundance of pure air; and the door between the two apartments must effectually shut off the passage of heated air. This is the Turkish bath reduced to its barest essentials. A decided step in the direction of efficiency and comfort is the intervention of a middle and moderately warmed room, to which can be relegated the shampooing and washing operations, leaving the third as a purely sudatory chamber, raised to a higher temperature than would otherwise be convenient. The method of heating is peculiarly open to elaboration, and with fruitful results. The heat may be radiated from a system of pipes or flues, or be effected by hot air, or by a combination of the two, the furnace being in a separate chamber. The cooling-room serves very well as a dressing-room; but a

separate apartment may be provided for this. In large public establishments it is usual to have separate shampooing- and washing-rooms, and two or more sudatory rooms at different temperatures; and besides the necessary plunge-bath, which may be in a special room, there may be a swimming-bath. The equipment must, of course, include a laundry department, and various offices for the management and the attendants. But, broadly speaking, the rooms used by the bathers are resolvable into three sets—*cool*, *moderately heated*, and *very hot*.

Vitruvius and other Roman writers, in describing the baths of their times, refer to certain apartments by name. Three of these—the *frigidarium*, *tepidarium*, and *caldarium*—are frequently mentioned; and as the names indicate their temperatures, they provide a means of bringing the Roman into line with the modern 'Turkish' baths. Galen mentions them respectively as the apartments passed through in rotation. He gives instructions how his patients are to be undressed in the *frigidarium*, to be anointed in the *tepidarium*, and, after a stay in the *caldarium*, to be bathed in the plunge-bath of the first apartment upon their return. Other apartments are mentioned by these writers as the *apodyterium* or *spoliatorium*, the dressing-room; the *elaeothesium* or *unctuarium*, where the bathers were anointed, or the unguents were kept; the *lavatorium* or washing-room; the *sudatorium* or sweating-room; and the *laconicum*, which perhaps is simply an alternative name for the *sudatorium*. It is clear, however, that some of these apartments were not always present, even in large establishments; also, that the names were not always used in the same sense. Vitruvius, for instance, has no mention of the *apodyterium*; and when Pliny, in describing the baths of his Tuscan house, tells how "the *apodyterium* receives in its cold cell him relaxed and joyous from the bath," and that "in this is a plunging-bath wide and deep," it is evident that this apartment was the *frigidarium* of other writers. In many of the baths, even large ones, there was no separate room answering to the *sudatorium*. In some, an alcove or recess curtained off in the *caldarium* may have served the purpose; but apart from this, there is reason to think that 'sudatorium' was sometimes used as an alternative name for the latter. Again, the ancient writers differ considerably in the order in which the baths were taken. Perhaps the fashion of bathing changed from time to time; or, more likely,

the order was a matter of personal caprice; and the complex plans of many of the public baths seem to have been designed to meet this contingency. What is certain is this—the Roman baths, like the modern 'Turkish,' always present a series of apartments from cool to hot; but in assigning to these apartments their classical names, the ambiguities of the ancient writers should be kept in mind.

Several points in the procedure of the Roman bath should here be noticed. So far as we know, soap was not used. After perspiration, the body was scraped with the strigil,[1] a curved instrument of bronze, iron, bone or silver, to forcibly remove the dirt and dead portions of the cuticle. This was followed by the sponge, and delicate people often dispensed with the strigil altogether and used the sponge alone. The place where this scraping process took place would, of course, be one of the hot rooms. At a later stage, when the body was sufficiently cooled, perfumed oil or ointment was rubbed into the skin. This anointing was accomplished in the *elaeothesium*, in the *tepidarium*, or occasionally in the *apodyterium*. Sometimes the bather was also anointed before entering the hot rooms. Physical exercise was a concomitant of the bath. Even domestic baths sometimes had their tennis-court (*sphaeristerium*), as had Pliny's. In most of the public baths there was a spacious court (*palaestra*) with porticoes, *exedrae*, swimming-bath, etc., and other conveniences for out-door recreation, ball-playing being a favourite pastime. Both Greeks and Romans considered that bodily exercise was a preliminary, conducive to the beneficial effect of bathing; and, indeed, this alone was often depended upon by the robust to produce the requisite perspiration, a turn in the swimming-bath completing the process.

The *caldarium*, according to Vitruvius, was placed next the furnace, erected over a hypocaust, and provided with a bath (*alveus*) and usually another receptacle for water, the basin-like *labrum*. In the plan, Fig. 57, of the baths of a house on the site of the ancient Stabiae, near Pompeii, the room D exactly answers to the description. In the rectangular recess at the end next the furnace is an oblong *alveus*, and at the opposite end an ample semicircular alcove. The corresponding rooms in the two older public baths of Pompeii—the Stabian and those

[1] *Roman Era in Britain*, Chap. xii.

near the Forum—are precisely similar, only larger, and they retain, in addition, the *labrum*, which is placed in the apse. This, in the latter establishment, is still nearly perfect, and has an internal diameter of about 8 ft., and a depth of about 8 ins., with provision for a central tube, fountain-fashion, to supply cool water for the heads of the bathers before quitting this heated room, and to quench the thirst induced by the excessive perspiration. The *alveus* is about 15 by 4 ft., and is lined with white marble. A suitable depth is obtained by a broad raised sill reached by two steps, and with an inner submerged step, upon which the bathers sat, half-immersed in the hot water; while the opposite side or back is sloping—the cushion, or *pulvinus*, of Vitruvius—to support the backs of those who sat on the floor of the bath and were thus more completely immersed. Other *caldaria* in Italy are of similar form and arrangement to those just described, and they probably represent an early prevailing type.

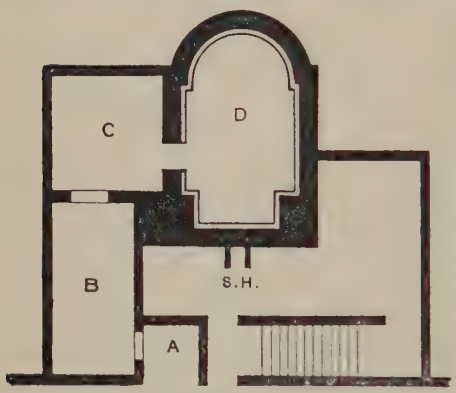


FIG. 57.—Domestic Baths at Stabiae, Italy.

Each of these Pompeian *caldaria*, like most of the larger bathrooms there, had a semicircular ceiling springing from a cornice, and the alcove was surmounted with a half-dome at a lower level, both being ornamented with stucco mouldings and fresco. The hypocaust opened into a continuous hollow or flue in the walls, so that the whole apartment may be likened to an oven, floor and walls radiating heat upon the bathers. The furnace-room was along one side of the *caldarium*, and in addition to the furnace it contained three cylindrical tanks for water, the third of which was immediately over the fire; the second sufficiently near to receive a less degree of heat; while the first was more distant, and was only slightly warmed, if at all. Vitruvius refers to these brazen vessels as a necessary equipment of public baths, and he designates them as the 'frigidarium,' 'tepidarium,' and 'caldarium,'—names which sufficiently indicate their

different temperatures. They were undoubtedly connected together by pipes, in such a way that any water drawn from the third would be replenished from that of the second, which being already warmed would not materially lower its temperature, and in its turn this would be replenished with the first which received the cold water of the service pipe.

A simpler system was adopted in domestic baths. In a Roman farmhouse at Boscoreale, near Pompeii, every detail was found in singular preservation.[1] The furnace which heated the hypocaust and the single tank was in a small room entered from the kitchen. This tank was of lead, cylindrical, and its lower portion was sheathed in masonry. It was fed from a cistern of cold water in the kitchen by a lead pipe. The *alveus* and the *labrum* were each supplied by a pipe which, T-fashion, branched from a cross-pipe connecting tank and cistern, the latter pipe having a stop-cock on either side of the junction. By turning on one cock or the other, hot or cold water could be obtained, and by regulating the flow of both, the water would be of any intermediate temperature as desired, thus the *alveus* could be used as a cold-water plunge when required. In the few Pompeian houses which had baths, these were usually placed next the kitchen, and there is little doubt that the hot-water apparatus was similar to that of Boscoreale, and supplied the kitchen as well.

The other chief apartments of the Roman baths will not detain us long. The *tepidaria* of the two older public baths of Pompeii also had arched roofs, but they lacked the apse. That of the Stabian baths had, in its final state, a hypocaust and hollow walls, but its distance from the furnace ensured a mitigated temperature. That of the other baths had neither, being warmed by a brazier, which still remains *in situ*; it also retains three bronze benches. In the little baths at Stabiae, the *tepidarium* would be the middle room (C) of the suite.

In each of these Pompeian baths two other rooms completed the series of apartments used by the bather. The one—the first entered—was an oblong vaulted chamber; and the other was smaller and of peculiar form, which, in the one establishment, was reached from the entrance vestibule, and, in the other, directly from the room just referred to. In both establishments,

[1] Mau, *Pompeii*, p. 356.

the former room was provided with stone benches, and in the Stabian there was in addition a row of recesses or niches below the cornice, evidently to receive the clothing of the bathers; these, in the other baths, appear to have taken the form of wooden lockers, or simply a shelf, the mortice-holes for which may be seen in the walls. The other room was circular, with a conical roof open in the centre to the sky, and had four small alcoves, into which the marble floor extended, the central area being occupied by a circular cold-water bath or *baptisterium*. The water which supplied this receptacle gushed through a small niche in the upper part of the wall. The walls were decorated to represent a garden, and the dome was blue, studded with stars—"the bather could scarcely feel the narrowness of a room, the decoration of which was so suggestive of expanse and open air (Mau)." The oblong room was the *apodyterium*, or perhaps it would be more correct to regard it as the combined dressing- and cooling-room. The little circular chamber is known as the *frigidarium*, but *baptisterium* would perhaps be a more correct designation.

Each of these Pompeian establishments had a courtyard or *palaestra*. That of the Stabian baths had a portico on three sides, with an open-air swimming-bath and other tanks and a dressing-room on the fourth side. In the smaller baths this courtyard was smaller, and while it had a portico on three sides, it lacked the swimming-bath; the central space, moreover, appears to have been treated as a garden, so that the portico alone was available for exercise.

These preliminary digressions have been necessary, as the remains of the baths of Roman age in this country are too slight to be easily interpreted without recourse to information from other sources. This, of course, presupposes that our baths were on the principle and followed the models, of those of Roman writers and of Italy, and were not the outcome of some native system of bathing. The whole trend of evidence, however, goes to show that they were on precisely the same lines, the only difference being that they were as a rule smaller and less sumptuous than those of the Continent.

Our first example was excavated near the south-east corner of Caerwent in 1855, by Mr. Octavius Morgan, F.R.S.[1] It is remarkably compact, occupying a space only 34 by 31 ft., and

[1] *Archaeologia*, xxxvi, p. 433.

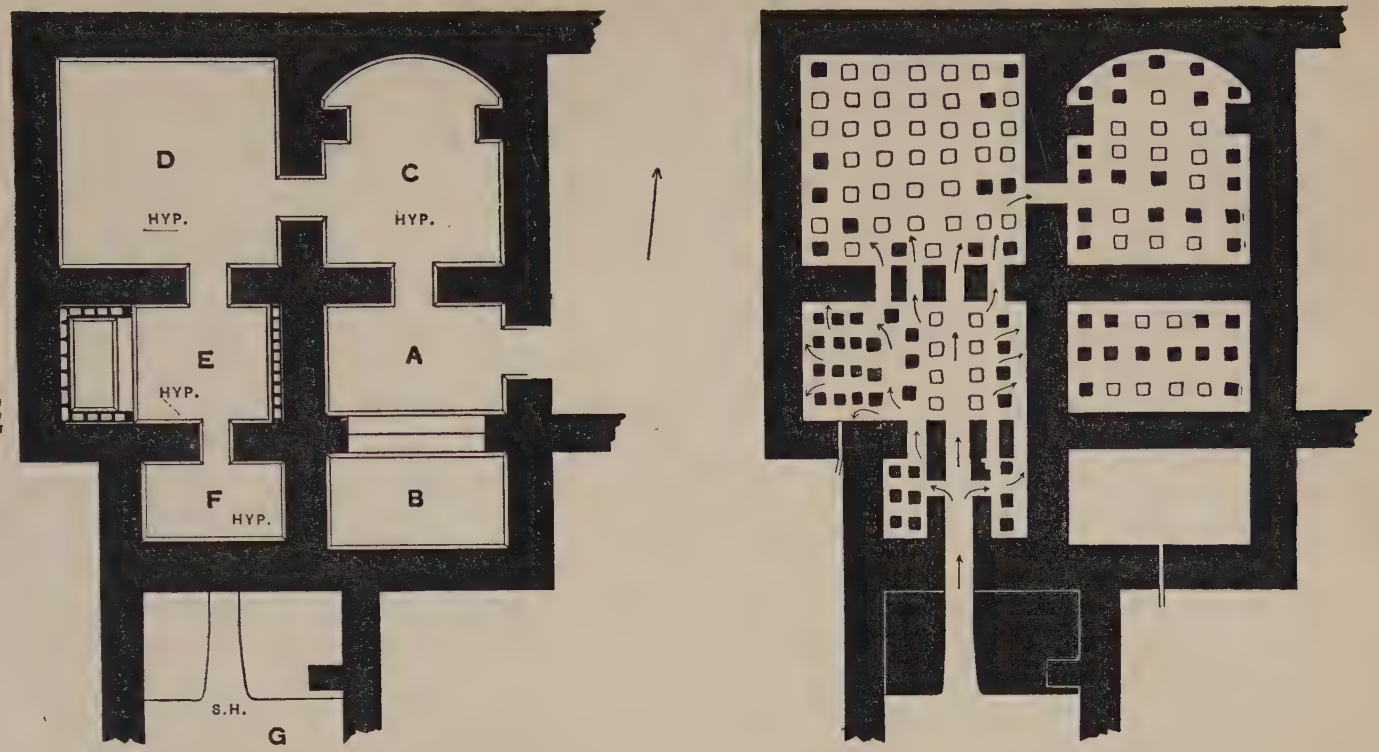


FIG. 58.—Plans of Domestic Baths, Caerwent—the first on the floor-level, and the second showing the hypocausts below. (After O. Morgan.) (10 ft. to 1 in.)

appears to have formed a semi-detached block at the west end of a house, which has not yet been explored, but of which a rich mosaic pavement was laid bare in 1777. The two plans here given are on different levels, in order to show the rooms used by the bathers and the heating arrangements below.

It contained the following sequence of rooms, each opening into the next by a narrow door: The first, A, was a narrow ante-room, apparently entered from an open court. On its left or south side was a cold-water bath in a recess, B, 10 ft. 6 ins. by 5 ft. 6 ins., with a flagged floor bedded in concrete, 3 ft. below that of the room, and its sides were of fine brick concrete, painted red. Between it and the room was a sill or dwarf wall, 9 ins. high, with a step or seat in the bath, the drain being in the middle of the south side. The second room, C, was larger, and had a shallow alcove between projecting piers at the farther end. The third, D, was the largest of the series, a simple square room. The fourth, E, was narrow like the ante-room, and was provided with a hot-water bath at its west end, smaller and shallower than the cold bath. The contiguous walls, which formed three sides of this *alveus*, as also the opposite wall of the chamber, were lined with flue-tiles, communicating with the hypocaust below. The bottom was formed of a single flag, which rested upon the hypocaust pillars, and its sides were of red stucco, with a drain at the south end. The fifth and last room, F, was immediately above the furnace.

The floors (of which only small portions remained) of these chambers had been supported upon sandstone pillars, 2 ft. high, except those of the fifth, which were 6 ins. higher. The intervals between the pillars had been spanned with flagstones, upon which rested the concrete of the floors and their plain sandstone mosaic, the total thickness being about 14 ins. The greater height of the pillars under the final room implies a higher floor, or one of thinner construction. All the floors, including those of the two baths, had the usual quarter-round skirtings of stucco, and as these passed round the openings, this, together with the absence of reveals and pivot sockets, renders it probable that they were closed with rugs or thick curtains.

The second plan elucidates the arrangements for heating the apartments. The furnace was in a sunk yard or shed on the south, G, which would be provided with suitable storage space for fuel. The aperture (*praefurnium*) was between two strong

cheeks of masonry, 5 ft. high, which with little doubt supported a boiler as at Boscoreale, the space not allowing of more than one tank. The gaseous products of the fire passed into the hypocausts through an arched opening in the external wall of the building, and the wall-flues of the fourth room (E) would induce the necessary draught. But the hot gases were not allowed to circulate at random. A passage between parallel walls under F directed their main volume into the second hypocaust, that under E; lateral openings in this passage and others in the intervening wall of the two rooms allowing a portion of them to pass through the pillared portions of the first hypocaust, as indicated by arrows in the plan. The next wall was pierced with four openings, of which that facing the end of the passage was the largest. The hypocaust under C was entered by a single opening; while the pillared space under the ante-room was entirely shut off from the heated currents, and its purpose was evidently to keep the floor above dry.

As there was no trace of vertical flues or other means of exit from the hypocausts below the second and third rooms (C and D), the circulation of the hot gases in these hypocausts presents a difficulty. If, however, the missing pillars under E were arranged so as to leave a clear course beyond the passage or flue under F, the impetus of the current through the passage would probably be sufficient to carry a large portion of these gases through the opposite large opening into the hypocaust below D, which, circulating between its pillars, would find their exit through the smaller openings on either side, and thence escape by the vertical flues. This leaves the final hypocaust still 'in the cold,' but its single opening proves that only a slight degree of warmth was required in the room above. Again, gravitation would aid the circulation. The hot air in parting with its heat would contract and sink, and tend to flow back as a heavier stratum through the openings. In the *Antiquary* of 1894,[1] the writer suggested as a means for effectually inducing a circulation in the third hypocaust, that the flue under F was continued under E, with lateral openings to allow a portion of its current to pass into the latter hypocaust, the residue being projected into the former through the wide opening at its end. The pillars in outline on our plan are purely conjectural, and as the central part of E had collapsed,

[1] *Antiquary*, xxix, p. 168.

it is just as reasonable that it was occupied by such a passage as by pillars—what would efface the one would efface the others.

Mr. Morgan regarded the rooms successively as the *frigidarium apodyterium, tepidarium, caldarium,* and *sudatorium*; but perhaps it would be more correct to regard the first as simply an entrance lobby or ante-room, and the second as a combined cooling- and dressing-room, the alcove providing space for a lounge.

We now pass on to another example of domestic baths—those of the house at Chedworth, described on p. 160.[1] They formed, as already stated, the northern portion of the west and chief range; but, as at Spoonley Wood (p. 159), there was no

FIG. 59.—Domestic Baths, Spoonley Wood and Chedworth. (30 ft. to 1 in.)

direct communication between them and the house, and this seems to have been customary in order to prevent the access of the warm air to the living-rooms. The entrance was from the main corridor. The rooms occupied a smaller space than the Caerwent example, but they were more sumptuous, for three or four had rich mosaic pavements. At the north end was the stokery, entered by a flight of steps, and by its side, the fuel-house or shed. Entering a narrow lobby, A, Fig. 59, with a plain floor, a door on the opposite side opened into a square room, C, the largest of the series; and on the right, the lobby opened by its full width into a long room, B, which had at its farther end,

[1] *Jour. Brit. Arch. Assoc.* xxiv, p. 130, and *Arch. Jour.* xliv, p. 328. In the former is a large view of these baths, but incorrect in some details.

between two projecting piers, a cold-water bath of similar form and construction to that at Caerwent, except that it was provided with two steps—or perhaps more correctly a seat and step—behind its raised sill, and a seat at each end. The drain was at the east end. A narrow door from this apartment led into a small square room, D, the sides of which were jacketed with flues; and this in its turn opened into another room, E, of similar size, next the furnace. This room was in a very ruinous state, but its walls appear to have been similarly jacketed; and on its left side was a lunate hot-water bath, F, within an alcove, and entered over a raised sill with a seat or step behind it. The stokery, G, with its provision for the storage of fuel, H, was probably roofed and formed a low building at the end of the range. The furnace was of similar form and construction to that at Caerwent.

The baths at Spoonley Wood resembled the above—but were somewhat larger. The entrance, A, was a flagged passage, which opened on its left side by a wide bay upon the cold-water bath, B, 16 ft. by 11 ft. 6 ins., with sides and bottom lined with the usual brick concrete. This tank occupied the whole area of a room which projected into the courtyard. At the end of the passage was a door into a spacious square room, C, with an elaborate mosaic floor; and a contiguous door in the side of the passage led into a smaller room, D, with a floor of similar character. The plan now becomes obscure. It shows a long apartment, E, which had a mosaic floor, and was probably entered from the last room; then a narrow transverse space, F, which Prof. Middleton regarded as the furnace, but which is more probably the site of the hot-water bath. The furnace has the usual massive cheeks of masonry projecting into the stoking-house G, which served as the supports of a boiler or cistern. The hypocaust seems to have been of a simple kind, consisting of long channel or flue passing under E and D, and throwing out branches under C to several vertical flues in the walls of that room; but it is difficult to understand how a simple flue could have sufficiently heated the first two of these rooms, which evidently were the *caldarium* and *tepidarium*. Their remains, however, were very ruinous, and probably the full heating arrangements were not made out.

Silchester supplies the most complete plan of a Roman

public bathing establishment in this country.[1] It was situated near the south-east side of the city in a hollow whence a small brook arose. The structure underwent many alterations and extensions before it attained its final form. It is not our province to enter into its complicated history, but to describe the building as originally planned, and only indicate some of the chief transformations. Briefly, those modifications were to provide increased accommodation. Every room was enlarged, and new ones were added, until the plan bore little resemblance to the original one, beyond that the general sequence remained the same.

The original plan is shown in Fig. 60. The front presented a symmetrical portico, A, 68 ft. long and 8 ft. deep, which must have been one of the chief architectural features of the town. Its colonnade rose from a substantial plinth, and it carried a timber architrave which supported the roof. The eight Doric columns were disposed in two series, leaving the central intercolumniation wider than the rest, which was probably flanked by piers to carry an arch and pediment or some other architectural feature that accentuated it as the public entrance. Behind this portal was the entrance into a peristyled yard or *palaestra*, B, the roofed ambulatory of which was 10 ft. wide, and separated from the central space by short columns on a dwarf wall.

On the opposite side of the court was the entrance to the series of bath-rooms. The first of these was an oblong hall, C, 41 by 24 ft., with an *opus signinum* pavement. A narrow door on the farther side opened into a longer but narrower double apartment, D, which had at the left end a rectangular alcove containing a cold bath, with the usual raised lip, and a step or seat along three sides, terminating at one end in a quadrant-shaped platform, perhaps for steps. The floors of this bath and of the room were of small bricks set herringbone-fashion on edge in red cement, and the walls were of *opus signinum*. From the middle of the division first entered, ran an underground drain which appears to have drained a circular sunk basin of Purbeck marble about 5 ft. in diameter, fragments of which were found. A wide door gave access to a series of three rooms, a central double room, E, which had on the right a narrow apartment, F, with a rectangular alcove, and on the left a small oblong room, G. The

[1] *Archaeologia*, lix, p. 337.

second, with its alcove, rested upon a pillared hypocaust, which was heated by a furnace in its west wall ; and this hypocaust probably

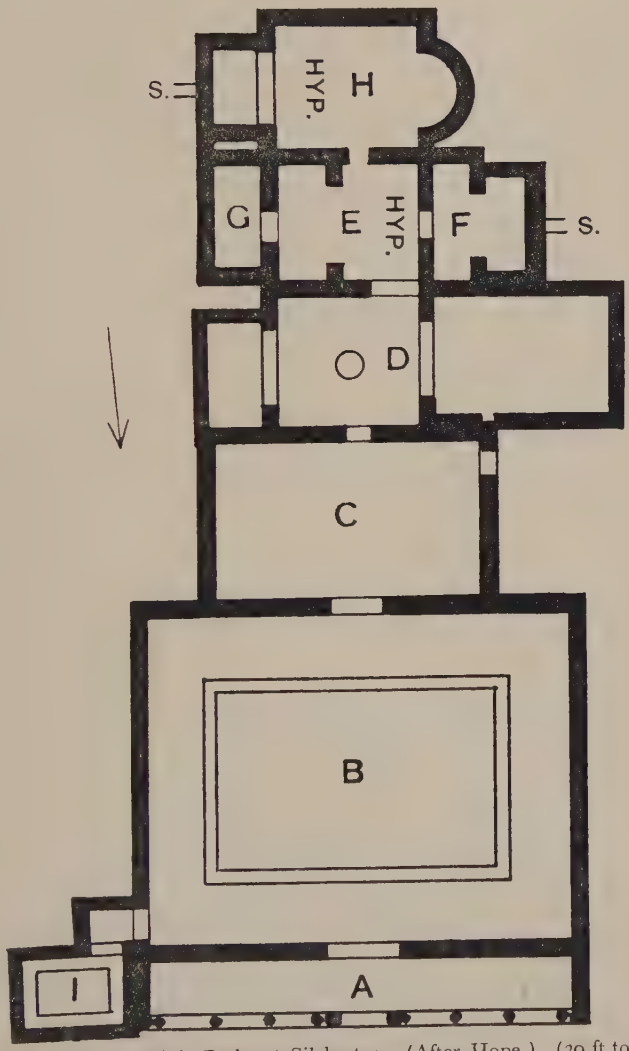


FIG. 60.—Plan of Public Baths at Silchester. (After Hope.) (30 ft to 1 in.)

extended under the middle room, but this is uncertain. The little room on the left, G, was probably a store-room or *unctorium*. The final room of the suite, H, had at one end a semi-

circular alcove, and at the other, a rectangular one for a hot bath. Under the whole of it was a hypocaust heated by a furnace, which projected from the latter end, and with little doubt supported the tank or tanks for hot water. In this room were found some fragments of two Purbeck marble basins, which, unlike the one mentioned above, stood upon the floor.

The uses of these several apartments offer little difficulty. The first, C, was certainly the *apodyterium*, and was spacious enough to contain dressing-boxes or other suitable arrangements in wood. The second, D, was the *frigidarium*. Its basin appears to have been an unusual feature; but a stone one of similar size was found in the corresponding apartment of the military baths at Chesters, in Northumberland, which was supplied from a cistern in the wall between the *frigidarium* and the *tepidarium*, and drained by an underground channel, as in the present case. This basin "can only have been intended," Messrs. Hope and Fox suggest, "as a kind of shower-bath for bathers who preferred that to the plunge-bath, and has its parallel in the Turkish bath of to-day." The large division of this room on the right was probably furnished with seats or lounges to accommodate the bathers until the cooling process was finished. The third room, E, was clearly the *tepidarium*. The adjoining room, F, being nearer the furnace, would be the *sudatorium*. The last apartment of the series, H, exactly reproduces the older Pompeian *caldaria*; and it is probable that the basin fragments represent two consecutive *labra*, each of which occupied the apse, the usual position. The whole plan, it will be seen, was conveniently and admirably arranged. Like the later public baths at Pompeii,[1] it consists of a single suite of rooms.

The small building, I, 19 ft. by 15 ft., at the end of the portico, was the latrine. It was entered from the corner of the peristyle by a little porch or lobby. Around its four sides ran a channel, 18 ins. wide, by 3 ft. deep, and built of brick, over which the seats were arranged. This channel was flushed from a watercourse under the portico floor, and it drained into a pit or cesspool, about 4 ft. square and lined with wood, on the opposite side, the overflow from which was probably conveyed to the

[1] The earlier baths at Pompeii contained two suites each, a larger for men and a smaller for women.

brook, which had its source in the hollow in which the baths were built.

As intimated above, we do not intend to trace out the intricate succession of changes to which this building was subjected. It will suffice to mention that the portico was replaced by a wall with a gateway; the latrine was trebled in size and overlapped nearly half the front of the courtyard; and the latter was considerably extended at both ends. In the sequel, the *apodyterium* was of the same length as the extended courtyard, from which it was entered by two doors. The *frigidarium* was nearly as long, and its bath was now at the right end. The *tepidarium* consisted of two rooms, the larger of which was a new extension to the left, while its large furnace chamber overlapped the right end of the old *tepidarium* and part of the old *sudatorium*; and beyond this to the right was a square room, probably "a drying-room for the attendants." The *caldarium* was extended to the left and received a semicircular alcove to balance that at the opposite end. But previous to this alteration, a second *caldarium*, with a rectangular alcove at each end, had been erected along the farther side of the old one, and for some reason had been demolished. The alcove at the right end appears to have contained a seat, while the bath occupied the left and larger alcove, behind the wall of which was the furnace-room, from which the hypocaust, extending under the whole apartment, was heated. Even this *caldarium* underwent at least one great alteration. The reader can imagine what a tangled and confusing medley of fragmentary walls and superposed patches of flooring, these baths presented upon excavation! Little could be gleaned as to the superstructure. A fallen mass of brickwork from the western alcove of the *caldarium* retains a portion of the jamb and square head of a window. The length of this jamb, 3 ft. $5\frac{3}{4}$ ins., shows that the window was at least of that height; and above the lintel are some inclined tiles which appear to be a portion of a flat relieving-arch, indicating perhaps that the opening was of considerable width. The jamb was slightly splayed internally; but as its outer portion is broken away, it is impossible to say how the glazing was fixed. Nothing was found to warrant a belief that any of the rooms were vaulted, and in the opinion of the explorers the walls were not strong enough to have carried arched superstructures. It is probable, there-

fore, that the rooms were ceiled with lath and plaster, or, as Vitruvius recommended, with tiles covered with plaster attached to the under side of the roof-timbers. The walls were plastered externally.

An extremely interesting feature must be noticed. Under the earlier furnace passage of the second *caldarium* was a flue-like passage, 7 ins. wide and covered with flat tiles. This, upon entering the apartment, became a triple passage of three lines of curved roofing-tiles, all embedded in the concrete of the hypocaust floor, and gently rising in its progress. Upon approaching the opposite alcove, they again coalesced into a single passage formed of flat roofing-tiles, which sent out two parallel branches of similar construction to the south side of the alcove. Nothing remained to show how these passages ended; but the explorers suggested that they opened into vertical passages which were continued into the room above, and that the whole arrangement was for the supply of fresh air, warmed by its passage under the furnace and hypocaust floor. Thus the Romans anticipated one of our methods of heating and ventilating buildings!

The public baths of Uriconium were on a larger scale. Their remains were partially explored in 1859, and Mr. Thomas Wright's long and detailed description of them in *Uriconium*[1] is not as lucid as it might have been. Several years ago, Mr. George E. Fox further investigated the remains,[2] and some of his conclusions differ from those of Mr. Wright.

The buildings formed part of an important group in the heart of the town, a plan of which is here given (Fig. 61). They lay to the south of the Basilica, and thus were sheltered from the north winds by its lofty range. To the west were two shops, P,P, and a small courtyard enclosed on three sides with rows of small chambers or cells, which, from its forum-like arrangement, has been designated 'the little market-place,' Q. The whole group constituted the western portion of an oblong *insula*, with streets on its north, south, west, and probably east sides. The eastern portion was not explored, and its extent in that direction can only be conjectured.

The plan of the baths presents many difficulties which can only be solved by further use of the spade. It will be observed that the buildings, so far as they have been excavated, consist

[1] P. 114. [2] *Arch. Jour.* liv, p. 126; *Vict. Hist. Shropshire*, I.

of a large oblong block, A, B, C, D, which abuts against the Basilica, and a west wing. The three rooms of this wing nearest this block, F, G, I, have their counterparts in F′, G′, I′ on its opposite side, rendering it probable that these also formed a

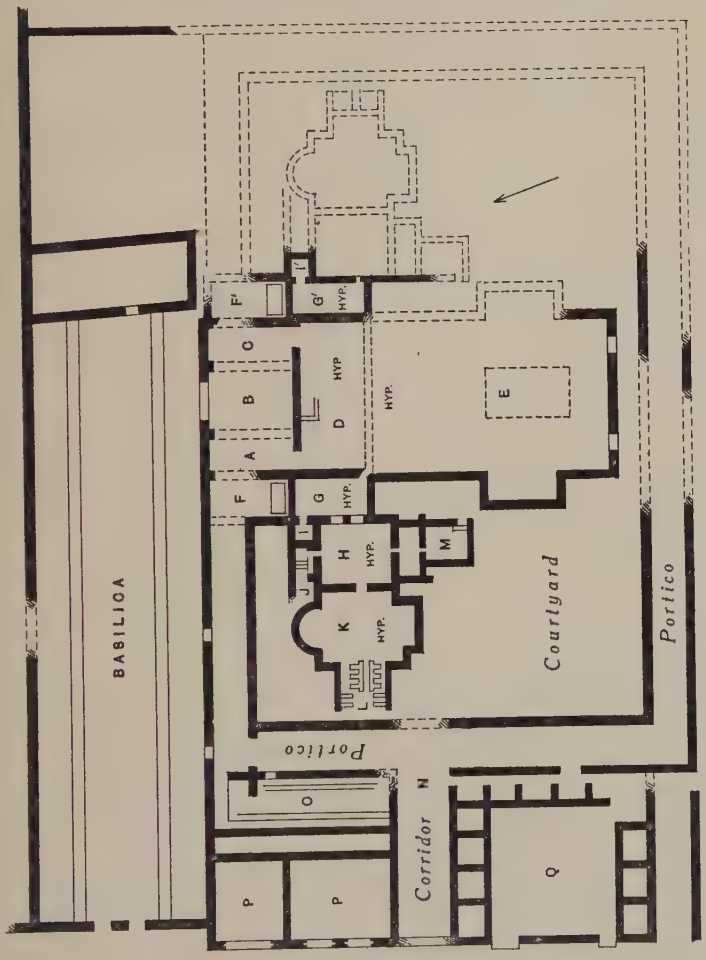


Fig. 61.—Plan of Basilica and Public Baths at Wroxeter. (After Wright and F x.) (70 ft. to 1 in.)

part of a similar eastern wing, a conjecture which has some support in the fact that buried walls are known to exist to the east of these rooms. The plan, if completed on these lines, would thus present a symmetrical range of buildings consisting of a central block with two wings, the whole being within a large

enclosure, surrounded, except where interrupted on the north by the block, by a portico. Mr. Wright considered that the west wing was the men's baths, and the east, the women's.

The west wing contained a suite of bath-rooms with an ample stokery, L, at the end, and another on the south, M. The rooms, K, H, G, were warmed by pillared hypocausts. No trace of wall-flues remained in K and H; but the north wall of G bears the impressions of a jacketing of them. The corresponding wall of G′ was also similarly lined with flues. The large room K is of typical *caldarium* form; but no trace of an *alveus* remains. Probably it occupied a recess next the furnace, and there may have been a *labrum* in the semicircular alcove. Fox regarded H and G as also *caldaria*, and Wright, the latter room as a *sudatorium*. This, however, it can hardly have been, as much of the heat from the furnaces must have been dissipated before reaching its hypocaust; besides, it does not occupy the usual position of a sweating-room. It answers better to a *tepidarium*; and the little room, I, paved with small bricks, herringbone-wise, which originally opened into it, is suggestive of an *elaeothesium*. Its counterpart, I′, on the east is precisely similar. The space J contains a flight of steps down to an opening, giving access to the hypocausts for cleaning purposes. The room F and its counterpart F′, contained each a mosaic-lined cold-water bath at the south end.

The oblong space, A, B, C, which had a vaulted ceiling, appears on Fox's plan as a single hall entered by a large central opening from the Basilica; but Wright construed the pilaster-like projection on each side of this opening as the starting of a cross-wall, and so divided it into three apartments, as indicated by dotted lines on our plan. He, moreover, regarded the opening in the Basilica wall as accidental. According to the former writer, this hall was the *apodyterium*, and the equally large room to the south, D, entered from it by two doorways, as the *tepidarium*. The floor of this room certainly rested upon *pilae*, but nothing was discovered to indicate how the underspace was heated, or whether it was heated at all. If the heat was derived from the hypocausts of the adjacent rooms, G and G′, the warmth must have been only slight. Similar pillars were found on the south side of this room D, but how far they extended was not ascertained. They did not extend as far as E, for there-

abouts was brought to light a sunk paved area, apparently marking the site of a swimming-bath, in the middle of a large enclosed space, with two doors on the south and a large rectangular alcove on the west, the east side probably corresponding. It is probable that this space was open to the sky, and that the alcove-like wings were dressing-rooms for the bathers, or spacious *exedrae*.

From these slender data we can only surmise the uses of the different apartments and spaces of the central block. Assuming that A, B, C was a single apartment, the number of openings into it—from the Basilica and the ends of the north peristyle, and the two doors in the south wall—is suggestive that it was the entrance-hall to the baths generally. The heating difficulties militate against D being the *tepidarium*. Here one is inclined to locate the *apodyterium*, and to regard G and G′ as the *tepidaria* of the men's and women's baths respectively. The two doors, just referred to, rather confirm Wright's surmise that D was divided into two rooms by a cross-wall, in which case the west room would appropriately be the men's *apodyterium*, and the east, the women's, each opening into their respective *tepidaria* by doors. The cold-water baths of F and F′ are awkwardly placed for access, as the bathers would have to pass through the entrance-hall to reach them; but Wright's division of this hall into three rooms would remove this difficulty, as the narrow side-rooms, A and C, would serve both as passages and cooling-rooms, the wider central space B being the entrance-hall, with the men's entrance on one side, and the women's on the other. Whether there was any direct intercommunication between these various rooms and the presumed courtyard with its swimming-bath to the south is quite uncertain; but this had two doors into the general enclosure of the baths, which may reasonably be regarded as the *palaestra*. The south portico may have had an entrance from the adjoining street; the west portico was certainly entered from the street on that side of the insula, by the corridor N.

North of this corridor was the long narrow latrine O, entered by a door from the west portico. Its floor was of small tiles laid herringbone-fashion, and the seats were over a channel next the portico; while on the opposite side was a strongly built passage-like space, probably the cistern from which the channel was flushed. The culvert which received the drainage of the baths

and the latrine passes under the Basilica, but its further course was not ascertained. It is unfortunate that much relating to these baths has to be left to conjecture ; but it is to be hoped that the day is not distant when so promising and important a site will be thoroughly explored.

It has already been stated (p. 108) that outside the walls of many forts are the remains of substantial buildings, which were supposed to be the residences of the commanders, but which in several instances have been proved to be baths.

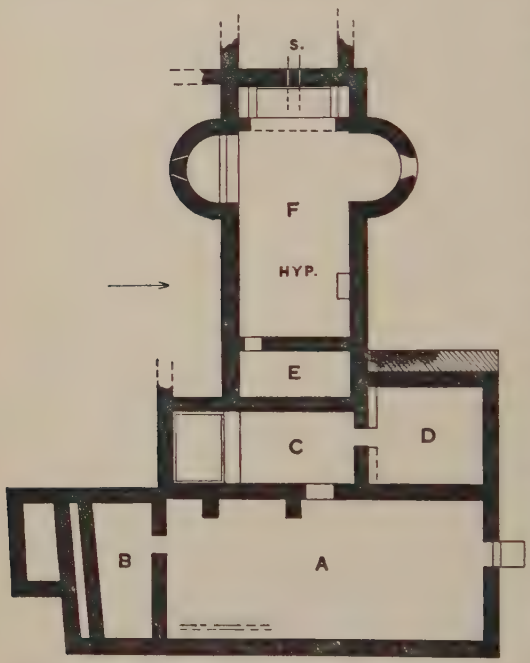


Fig. 62.—Baths at Great Chesters. (After Knowles.) (30 ft. to 1 in.)

One example of these military baths —at Great Chesters —must suffice. This building is about 360 ft. south of the fort, and was excavated by Mr. J. P. Gibson and Dr. Hodgkin in 1897.[1] A glance at the plan, Fig. 62, will enable the reader to follow a short description. A was a yard, 45 by 21 ft., entered by a door in the north end ; and a corresponding, but narrower, one in the opposite end, opened into what seems to have been the latrine, B. On the east side is a fragment of a gutter, and against the west side are the startings of two late walls, perhaps the end walls of a shed or some such building. In the middle of that side is the door into the bathrooms. The first of these, C, had a flagged floor, and on the left was the cold-water bath, the sunk floor of which was of concrete with a quarter-round skirting.

[1] Knowles, *Proc. Soc. of Antiquaries*, Lond. (N.S.), xvii, p. 29 ; *Archaeologia Aeliana*, xxiv.

FIG. 63. COURTYARD OF BATHS ('SUBURBAN BUILDING') AT CHESTERS

To the right, a door led into a square room, D, which was similarly paved, and had a masonry seat against its south wall. The next room, E, was a small one, with a concrete floor surfaced with *opus signinum* and resting upon a pillared hypocaust. The last room of the series, F, was the largest and had a spacious semi-circular alcove on either side near the end. Its floor was similar, with a similar hypocaust below. Beyond this room was the stokery, but it was not explored. The farther end of the room was converted into a recess by two lateral piers, behind which extended seats of masonry, but these do not appear to have formed part of the original construction, as they rest upon the *opus signinum* of the floor, and against that of the walls. There is no evidence that this recess contained an *alveus*, as its floor was upon the common level. But the left or south apse did contain one, which had a sunk concrete floor and was separated from the rest of the apartment by the usual raised sill and step. The end of the right or north apse has the interesting feature, rare for this country, of a window opening. Its jambs and sill are widely splayed on the inner side, the latter starting about 1 ft. above the floor-level. The internal width of the opening is nearly 5 ft., and remaining height about 4 ft. As fragments of window-glass were found below it, we may conclude that it was glazed, but as the outer jambs are broken away, it is impossible to say how the glazed frame was held in position. The external width of the window could hardly have been less than 3 ft. Fallen flanged voussoirs showed that this room or some part of it had a vaulted roof of light construction, the voussoirs forming a series of ribs, with flanges to support intervening tiles or flagstones. Similar voussoirs have been found in the baths of Chesters (*Cilurnum*). The pillars of the hypocaust were mostly of single stones, about 2 ft. 6 ins. high.

Great Chesters thus supplies not only a singularly complete plan of a Roman bathing establishment, but some valuable information as to its superstructure. The plan reminds us of the early baths of Silchester, and it resembles the military baths at Inchtuthill, Perthshire.[1] First, we have an oblong yard with latrines at one end. Then came the rooms B and C, one of which may have been the *frigidarium* and the other the *apodyterium*, or the latter room may have served the two purposes, the former

[1] *Proc. Soc. Ant. Scot.* xxxvi, p. 224.

being simply an ante-room, as the splash from the cold bath would render it rather uncomfortable for either purpose. The genial warmth of E would be appropriate for a *tepidarium*; and the greater heat of F for a *caldarium*; while its end recess probably served as a *sudatorium*. The furnace-chamber would, of course, have provision for a tank or tanks for hot water, and in it, or hard by, would be storage for the fuel. In the unusual size and planning of the *caldarium*, these baths do not stand alone. The corresponding apartment in the baths at Lydney Park in Gloucestershire, and at Inchtuthill, is of almost identical size and shape.

The plan of the baths at Chesters[1] differs considerably from that of the above. Its notable feature is the large yard (Fig. 63), in the west wall of which are seven round-headed niches, 8 ins. above the pavement, each 3 ft. high, 2 ft. wide, and 1 ft. 6 ins. deep. These may have served as lockers for the clothes of the bathers, and a pentice roof above would afford them shelter while undressing and dressing. The *caldarium* has a single lateral apse, at the end of which is the lower portion of a window opening of similar character and size to that at Great Chesters. In the middle of the *frigidarium* of these baths was found the base of a basin, about 4 ft. 8 ins. in diameter, which has already been referred to.

The baths at Gellygaer were excavated by the Cardiff Naturalists' Society in 1909,[2] and, as at Silchester, there was evidence of considerable alterations and extensions. In their last stage, the bathrooms formed an irregular block about 93 ft. long, with a large furnace house at one end, and obscure outstructures at the other, probably the remains of latrines. The first room entered was about 15 by 35 ft., and paved with flagstones from an older floor on the site. On the right was a spacious cold bath, 14 by 26 ft., within a projecting building,[3] and on the opposite side a passage-like room over a shallow hypocaust. From this a door led into two hot rooms of like size, together forming a block 29 by 39 ft. The second room—the *caldarium*—had a hot bath in a recess next the furnace. In the end of the passage-like room, just referred to, was a door into a circular hot room heated from its own furnace. The floors of the

[1] *Arch. Aeliana*, xii, p. 124.
[2] *Transactions*, xlii, p. 25.
[3] As at Spoonley Wood.

hot rooms were of brick concrete with the usual quarter-round skirtings ; the walls had been slightly decorated in colours ; the broken glass indicated glazed windows ; and the roofs had been covered with red tiles. From near the centre of the paved room a drain started, and paving-stones, shaped to form a ring, indicated that the original floor had either a circular perforated sink-stone, 1 ft. 10 ins. in diameter, or a *labrum*, as at Silchester and Chesters. As stated above, these baths had been considerably altered and enlarged, and the furnace-house, the circular room, and the cold bath were the most notable additions to the original fabric.

Circular bathrooms are rare in this country. One, a trifle larger, with a hypocaust and the remains of a jacketing of flue-tiles, was found outside the Roman fort at Binchester (*Vinovum*) in 1887, and evidently formed part of a large bathing establishment. Another, smaller and with external buttresses, was attached to the side of the large baths at Castlecary, which, contrary to the rule, was *within* the fort.[1]

The baths of Bath, the remains of which are unrivalled from an architectural point of view in this country, belonged to a small but highly important class of bathing establishments, which differed from the ordinary in several particulars. The latter were essentially hot-air baths, water, cold or artificially heated, playing a subordinate part, whereas the former were erected over natural hot springs, and the many and varied tanks that received the healing waters, mostly deep enough for immersion, were a chief distinguishing feature. These *thermae*—it is convenient to restrict the term to them—were large and complex, with rooms of different temperatures, some with means of superheating the water, in order to meet the needs of the patients, different diseases requiring different treatments. The Romans held these mineral springs in high estimation, and the more important developed into fashionable spas. Bath (*Aquae Sulis*) was such a spa, small, it is true, but its central group of buildings—the *thermae*, temples and other structures—were on a scale of grandeur that warrants the belief that it was as much the resort of wealth and fashion under the Romans as under our Georges.

The remains of these baths, so far as they have been opened out, are roughly 330 by 120 ft., but they certainly extended

[1] *Brit. Arch. Assoc.* xliii, p. 304 ; Roy, *Military Antiquities, etc.*, p. 161 ; *Proc. Soc. Ant. Scot.* xxxvii, p. 316.

farther to the east and west and probably to the north. The central feature was a spacious hall divided into a nave and aisles by two rows of piers, and on either side were three alcoves or *exedrae*, the whole having a vaulted roof. The hall enclosed a bath 83 by 40 ft., the sides of which consisted of six steps. At each end were various smaller halls and rooms, some with baths and hypocausts; and at the north-west of the range of buildings was a large reservoir of an irregular oval shape, about 50 ft. long, constructed over the springs to receive their water, the old use of which has been restored.

These various remains are open to view, and the numerous fragments of columns, cornices, and other carved details are preserved on the site. The most complete plan is that which accompanies Dr. Haverfield's *résumé* of all that is known of these baths, in the first volume of the Somerset section of the *Victoria History of the Counties of England*.

CHAPTER IX

FORUMS, BASILICAS, AND OTHER PUBLIC STRUCTURES

Forums and Basilicas

FORUM was originally the open space in front of a building, especially a tomb, but ultimately it designated one particular open space in a town, of which the modern market-place may be regarded as the counterpart. But the forum stood for more to the Romans than the market-place does to us. With its adjuncts, of which the basilica was chief, it was the centre of civic life and movement, combining the functions of market, town-hall, law-courts, exchange, and a gathering-place where the citizens discussed matters of mutual interest, settled points of difference, gossiped, and idled. It was the rendezvous for all classes, and for all purposes.

The forum itself was an open space surrounded by a portico, behind which were shops and offices, the basilica usually forming one side. The relation of forum to basilica may be likened to that of market-place to market-hall, as in a general way all that took place in the one might take place in the other. However the name originated—*basilica* means 'king's house'—this structure was to all intents and purposes a covered forum. In its earlier form it was forum-like, consisting of a central space (*media porticus*) surrounded by a narrow portico; but as this central space was covered as well as the portico, its width was determined by the structural limitations of the roof, hence was relatively narrow. It is probable that the earliest basilicas had open sides, that is, that the whole structure was supported on columns; but in later times the external columns gave place to more or less continuous walls, and the whole building assumed a hall-like character. The portico or ambulatory which at first passed all

round the central space, as at Pompeii, was eventually discontinued at the ends.

From Vitruvius we learn that the colonnades which divided the porticoes from the *media porticus* were often of two orders of columns, the lower of which supported the architrave of a gallery; but in his Basilica of Fanum there was a single order of lofty columns, and the gallery rested upon pilasters attached to the back of them.[1] At Pompeii, there was also a single order, but no pilasters or gallery, and so far as we know this was the case in Britain. The roofs were of timber. Whether there were clerestory windows is disputed. The Fanum basilica had openings above the entablature, but these appear to have been merely horizontal slits, introduced rather for ventilation and lighting the central ceiling than for diffusing a light below. It is probable that the general lighting of the interior was derived from large openings in the side walls, as seems to have been the case at Pompeii. Subsequently, however, the construction underwent a great change, and clerestory windows became an important architectural feature, as in the Basilica of Constantine. In this structure, the nave was separated from the aisles by arcades of three arches each, supported on massive piers, the columns now appearing as vaulting-shafts, the whole space, nave and aisles, having a vaulted roof.

An essential feature of the civil basilica was the tribunal, or tribunals (for sometimes there were several), where justice was administered. Normally, the tribunal took the form of a large semicircular or rectangular chancel-like recess at the end of the building opposite the chief entrance, but occasionally it was an internal structure, as at Pompeii. Its floor was raised above the general level, and in the centre was the chair of the *praetor*, and on either side the seats of the *judices* and advocates. Its front was fenced off from the hall by a low wall or an open screen (*cancelli*, whence our 'chancel'), and in the centre of this, or in front of it, was an altar. The great Basilica of Ulpia, erected by Trajan, had a tribunal at each end, while on one side, which may be regarded as the front of the building, were a grand central and two smaller entrances, from the Forum of Trajan; and on the opposite side a small court between two spacious

[1] For restoration of the basilica, see Viollet-le-Duc, *Lectures on Architecture*, I. Plates 8 and 9.

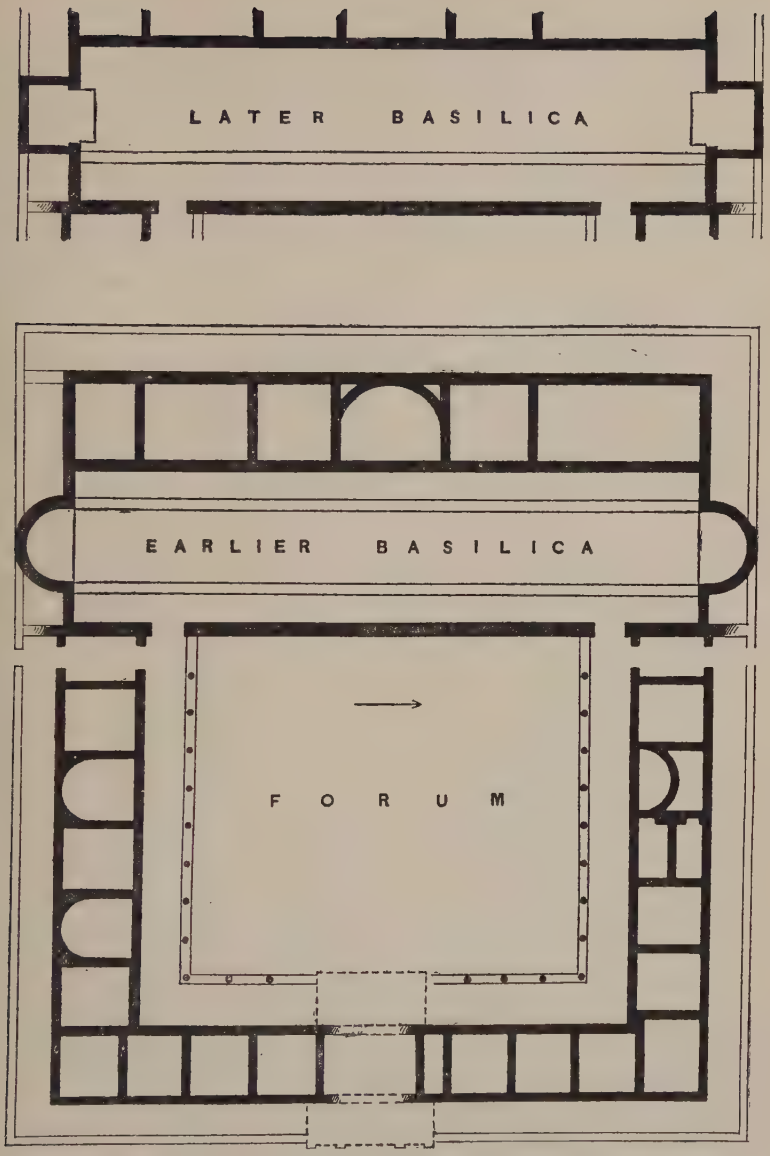


Fig. 64.—The Forum and Basilica at Silchester. (After Fox and Hope.)
(75 ft. to 1 in.)

apartments, which were used as libraries. In two, at least, of the British basilicas were several apartments along one side, some having wide openings to the hall, and we may reasonably suppose that they all were used for official purposes, judicial and administrative.

This preliminary 'canter' has prepared the reader for the more difficult pursuit of this chapter—the reconstruction, as far as possible, of the forums of this country from their scanty remains. Silchester [1] provides us with the most complete plan of one (Fig. 64). It was the central and chief architectural feature of the town, covering an oblong space about 315 by 278 ft. The forum itself occupied the eastern two-thirds of the space, and the basilica, with an external range of chambers, formed its western side, the whole group having an external portico interrupted by the chief entrance and the tribunals of the basilica. This portico averaged 14 ft. in width, the outer sleeper-wall serving both as a kerb and as a foundation for the colonnade. The columns were about 15 ft. apart and probably as high, and their timber architrave carried the lower edge of the portico roof. The whole plan, it will be observed, resembles that of the *Forum Traiani* in its main features.

The open square of the forum was 142 by 130 ft., and had on its north, east, and south sides a portico somewhat wider and probably loftier than the external one, and between the two was a range of rooms from 30 to 33 ft. in width. The chief entrance was a little south of the middle of the east side, so as to face a street from the east. Only its concrete foundations remain, but their massiveness and a few architectural fragments found about the site prove that it was on a grand scale, probably having the form of a triumphal arch, adorned with columns, and not less than 45 ft. in width. The remains of the rooms just referred to were too slight to supply a clue as to how they were entered, or whether they opened on both porticoes or the inner one only. The square rooms were probably shops. Two in the south range had apsidal ends towards the street, and Mr. Fox, in his masterly description of the remains, suggested that they "were used by the governing body of the city as offices of some sort, or courts connected with the forum." One of the square rooms of the north range was divided by a semicircular wall so as to present to

[1] *Archaeologia* xlvi, p. 349.

the inner portico a shallow apse, and this may have been the municipal shrine. The apartments next to the basilica were narrow, and were certainly passages affording side entrances to the forum.

Mr. Fox doubted whether the rooms, even if they were open to both porticoes, would receive sufficient light (a difficulty which especially besets the two apsidal rooms as any windows they may have had in their curved backs would necessarily be small) and he suggested that they were loftier than the porticoes, and had windows above their roofs. But as sloping roofs would render the rooms unduly lofty, he concluded that the inner portico had a terraced roof, and that the windows were on that side only. As he, however, suggested later that the rooms or shops on the north side of the forum may have had upper storeys opening on to the terrace, this somewhat weakens his argument. Still there is much in favour of a second storey, as the increased elevation would greatly enhance the architectural effect; but we will return to this question later.

The basilica was burnt down late in the Roman period, and was rebuilt on the old lines, but with two important deviations. The earlier structure is shown on our general plan. It will be noticed that it was divided into the usual nave and aisles by two colonnades, and that the tribunals were semicircular. The second building had a nave and a single aisle along its east side, and the tribunals were rectangular with their raised floors projecting into the nave. Along the west side of both halls were a central apsidal apartment with a raised floor reached by three steps which extended the full width of the front, and on each side of this, several rectangular apartments. The hall was entered by two doors from the ends of the inner portico of the forum, and possibly there was a central entrance from the square, as in the Basilica of Ulpia. The columns of the second basilica appear to have been such of those of the first as had escaped destruction. They were of Corinthian type of good design, with drums 2 ft. 10 ins. in diameter above the bases, and this implies, according to Mr. Fox, a height inclusive of the capitals of about 27 or 28 ft., and to this must be added 6 or 7 ft. for their timber entablatures. In each case the roof was undoubtedly of timber covered with tiles; but whether the whole space was covered by a single gable-roof, or whether the nave roof was of greater

elevation so as to leave an intervening clerestory, is a matter of conjecture. Mr. Fox suggested that the colonnades were interrupted in front of the great western apse to form a transept; and this implies a transverse roof (as in Vitruvius's Basilica of Fanum) of similar width and height to the nave roof, with an east and west gable. Whether there were clerestory windows or no, the main volume of light was probably derived from large windows or openings in the east wall. The earlier tribunals were probably surmounted with half-dome vaultings, and externally with shallow half-cone roofs; the later, with coffered ceilings and gable-roofs. There was no structural provision for galleries in either the earlier or the later building.

The later building was of inferior workmanship; nevertheless the interior must have had a certain splendour. The walls were aglow with colour, for many fragments of painted plaster were found on the site, as also pieces of marble wall-linings. The fronts of the tribunals appear to have been covered with Purbeck marble, and the apses to have had a white marble dado. A few fragments of a large stone statue of a female with a mural crown were found about the front of the western apse; and it is not unlikely that it stood in this recess and symbolized Calleva or the *Civitas Atrebatum*.

The remains of the Forum of Venta Silurum (Caerwent) have been explored as far as the modern buildings on the site admit (Fig. 65).[1] It resembled that of Silchester, but was smaller and simpler, forming an oblong block, 181 by 250 ft., in the centre of the town and on the north side of the main street. The chief entrance was from this street, through a single opening, which was probably arched; but its remains apparently related to the *back* of the structure, for the short side walls probably extended to the street side, some feet away, and conceivably there was a street-side archway of some architectural grandeur, with a portico on either side along the front of the building. The open square was 108 by 101 ft., was flagged, and had a marginal gutter cut in a line of large blocks of sandstone, with an outlet into an unusually large drain in the north-east corner. The portico was 16 ft. wide, with a concrete floor and a broad kerb, on which its columns rested, but there was no indication as to their positions. Behind the east portico was a range of

[1] Personal observation, and *Archaeologia*, lxi, p. 569.

shops, 20 ft. deep, with wide openings to the ambulatory. The shops on the south side of the square, on the other hand, had their openings to the presumed street-side portico. The excavation of the western side revealed two long lines of walling, but no remains of transverse walls dividing the space between them into shops. If it had ever been so divided, the walls were probably removed when a rectangular building was set across this range and the ambulatory in front. Its massive lower courses were about 10 ft. thick and were discontinued across the end next the square, indicating, perhaps, that the structure had an open front. The whole is suggestive of the *podium*, 35 ft. by nearly 50 ft., of a temple —possibly the sanctuary of the municipal lares.

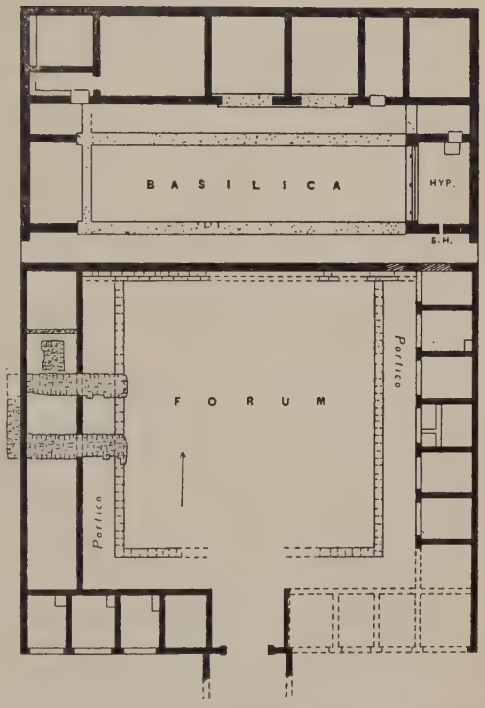


FIG. 65.—The Forum and Basilica at Caerwent. (After Newton and King.) (75 ft. to 1 in.)

The basilica was on the north side of the square, and was divided into a nave and aisles by two massive sleeper-walls which carried the colonnades, the total internal width being 63 ft., with a concrete or mortar floor. At the east end of the nave was a rectangular tribunal, across the opening of which stretched a sill of large blocks of sandstones with a shallow chase and three sockets to receive the foot of a timber *cancelli*. The concrete floor was higher than that of the nave, and rested upon a pillared hypocaust, and the chamber was entered by a door from the eastern prolongation of the north aisle. On the south side was a corresponding prolongation of the south aisle, containing the

stokehole of the hypocaust, serving as a passage to a street door. The excavations of 1909 proved that the west end of the basilica was treated in a precisely similar manner, except that the tribunal had no hypocaust, and the walls were too reduced to show whether its front had a similar sill. The length of the hall between the tribunals was about 125 ft. The south wall was reduced to the level of the floor, and along its outer side two stone steps stretched the full width of the forum-square. It seems probable from this that the wall was the sleeper of the piers of an arcade, in other words, that the south aisle was open to the square—an arrangement which may equally apply to the basilica at Silchester so far as its remains go, and which was usual in the head-quarters of the *castella*. How the hall was roofed is equally a matter of conjecture with Silchester; but the fragments of large columns of similar character to those of that basilica undoubtedly belonged to its colonnades.

The chambers along the back of the basilica were six, as at Silchester, but their arrangement was different, and Caerwent has the advantage of several of the openings between these rooms and the aisle remaining; but, unfortunately, the eastern two-thirds of the range is overlapped by a modern farm building, thus rendering it uncertain whether the intervening walls had doors. No means of access was found to the easternmost room, but probably it was entered from its neighbour, a narrow apartment with a door from the aisle. The next, a square room, had an opening to the aisle, 19 ft. wide, with no indication of having been provided with doors; perhaps it had a fence or screen like the east tribunal. The central room had apparently a similar opening. No direct access from the aisle into the next and largest room was found. It had, however, a door into the lobby of the westernmost room. This lobby was originally entered from the aisle by a larger door; but, as this was subsequently built up, there must have been some other means of access to these western rooms. The large room just referred to had a mosaic pavement and decorated walls,[1] and on the latter were several shallow vertical grooves which were continued on the floor, apparently to receive timber partitions of some sort, but how high or how far they extended is unknown. Little more can be said of this interesting range of rooms. Prob-

[1] Page 286.

ably they received light from windows in the back walls. A height of 25 ft. would not be disproportionate to the length and width of the largest room, and this may represent the height of the range, and it is reasonable to think that it had one continuous longitudinal roof. Possibly the smaller rooms had a storey above them reached by a staircase in the narrow second apartment from the east end.

To return to the shops of the forum—there is no direct evidence that they had upper floors for storage purposes as the Pompeian shops usually had, but something can be said in favour of these. The pillars of a portico 16 ft. wide could hardly have been less than 10 ft. in height,[1] and, adding to them an architrave and a sloping roof, the back of the portico would not be less than 16 or 17 ft. high. It is unlikely that the shops would be of less height than the portico, so that we may assume that the inner slope of their roof would either be a continuation of that of the portico, or would start at a higher level, thus giving an elevation of at least 22 ft. for its ridge. The shops would thus be lofty enough for upper floors reached by ladders and lighted by windows in the street wall, or by windows in front between their roof and that of the portico. The shops at Silchester were fewer than at Caerwent, but they were larger and their walls thicker. Accepting Mr. Fox's suggestion that the portico there had a terraced roof, this would admit of a second storey of shops opening upon the terrace, which may have been reached by staircases in the narrow apartments or passages next the basilica and on the north side of the main entrance. The shops were large enough to have their back portions partitioned off for storage purposes, with windows in their walls.

The Basilica of Viroconium (Wroxeter), which was excavated in 1859, resembled that of Pompeii in its planning, and in not forming an integral part of a forum-group (Fig. 61).[2] The forum has not yet been discovered, and is supposed to have been on the opposite side of one of the adjacent streets. A portion of the south wall of the former still stands high above the ground, and is the most conspicuous vestige of the ancient town, the rest of its remains being little else than foundations. These remains showed that the hall was 229 by 67 ft., with two sleeper-walls

[1] Mr. Fox's estimate for the corresponding columns at Silchester was 15 ft.

[2] *Uriconium*, p. 109.

which carried the colonnades, the columns of which were of similar size and design to those at Silchester and Caerwent. The nave was paved with small bricks laid herringbone-wise. The only traces of flooring in the south aisle were a few flagstones; while in the north aisle a mosaic pavement of simple design was found, the divisions of which were suggestive that the columns were $8\frac{1}{2}$ ft. apart. The chief entrance was at the west end, and was apparently a double one with an external portico. There was an interval of about 10 ft. between the street on the north and the north wall. This may represent another portico, for it is rather narrow for a range of offices as at Silchester and Caerwent. A central breach in this wall may be the site of a north entrance to the hall. On the south side and near the east end was a door into the public baths. At the east end are the foundations of a narrow enclosure entered by a small door, which was regarded as a yard by the explorers. It is where a tribunal should be, but as it is not at right-angles with the hall it may be an insertion of later date. Altogether this basilica requires further and more thorough exploration.

The Basilica of Corinium (Cirencester) was considerably larger than those described above. The late Mr. Wilfrid Cripps made a sufficient number of excavations on the site in 1897, to indicate a hall-like structure with the sleeper-walls for two colonnades, a western apse of the full width of the interior, and along the south side a row of chambers—the whole forming an oblong block.[1]

The walls of these chambers were thinner than those of the main fabric, showing that they were probably of less height; and this equally applies to the external walls of the spandrels of the apse, which Mr. Cripps regarded as small yards. The wall of the apse in its turn was rather thinner than the walls of the hall. There was no indication of an eastern apse, and he was strongly of opinion that that end of the building had a square portico. From these data we may fairly conclude that the Corinian basilica consisted of an oblong hall, 285 ft. in length, and of proportionate height, with a large western apse of less elevation; and an eastern portico which contained the chief entrance. The chord of the apse was occupied by a sleeper-wall, which probably supported the revetment and parapet of the

[1] *Trans. Bristol and Glouc. Arch. Soc.* xxi, p. 70; *Proc. Soc. Ant.* 2, vii, p. 203.

floor of the tribunal. The square stone pads of the westernmost pair of columns remained, but, owing to the presence of modern buildings on the site, it was not possible to ascertain how far the columns of each colonnade were apart. Fragments of the columns and their capitals were found, and here again they were of similar character to those at Silchester, but were slightly smaller. That this hall was not only imposing from its great size and architecture, but was enriched, like that of Silchester, with marble, was proved by the fragments of Purbeck marble moulding and Italian marble linings turned up during the excavations; and the roofs, it may be added, were covered with stone slabs.

The chambers along the south side of the basilica were 20 ft. in depth, and, to judge from those excavated at the west end, from 15 to 16 ft. wide, and between each was the square pad of a column or pilaster. Probably these chambers were shops, with open fronts between these columns or pilasters. Whether the north side of the main building was bordered with a similar range of chambers is uncertain; but Mr. Cripps was of opinion that the forum lay on that side.

On the west side of Bridge Street, Chester, were discovered in 1863 the remains of a large building which was almost certainly a basilica.[1] About 128 ft. of its south wall, 4 ft. thick, was exposed, which probably had extended to the street, as along the street side was found another thick wall, presumably the east end of the building. Sixteen feet to the north of the former wall was a parallel row of ten column bases or their cuttings in the rock; and at a further distance of 39 ft., another and corresponding row. Whether there was a corresponding wall on the north could not be ascertained, as modern buildings occupied the site. The columns were 12 ft. apart from centre to centre, and, to judge from the bases and the fragments of the drums and capitals, they were of Corinthian type, with a diameter of 2 ft. 5 ins. above the bases. Assuming that there was a north wall 16 ft. beyond the north colonnade, we have here a building divided into a nave and two aisles, of a total internal width of 76 ft.

At the west end of the excavation were some foundations which suggested a tribunal projecting slightly into the nave; but eastwards both rows of column bases ceased at 60 ft. from the

[1] *Roman Cheshire*, p. 134.

street. Whether these extended to the street was a disputed point, as no traces of their foundations were found in the interval, but it is noteworthy that the space would exactly allow of four more columns to each colonnade. In this case the hall would be 180 ft. long, as reckoned from the presumed tribunal.

The south wall was bordered with a range of rooms of unknown depth, as they were overlapped by modern buildings. Two of these rooms had hypocausts, and several of them mosaic pavements. As other hypocausted rooms are known to exist under these buildings, it is supposed that the various chambers formed part of a large bathing establishment. If so, the whole group must have resembled that of Viroconium in having the basilica to the north, entered from one of the main streets, and the public baths immediately to the south; and the former, like the nave at Viroconium, appears to have been paved with small bricks. In the opinion of two local architects, the drums of the columns were each constructed of two 7 ft. lengths of stone, representing a total height, with capital and base, of 18 or 19 ft. — a height proportionately less in relation to the diameter of the drum than Mr. Fox's estimate for the Silchester columns, and suggestive of an upper tier of columns or a lofty clerestory.

Of the remains described in this chapter, two only combine forum and basilica—those at Silchester and Caerwent. In each we have a symmetrical group of buildings, with the forum in front and the basilica behind, the chief entrance being in the front of the former, and the administrative courts and offices being at the ends and along the back of the latter. This planning too closely resembles that of the *principia* of the forts to be accidental. Of the basilicas at Wroxeter, Cirencester, and Chester we know less, and still less of their relationship to the forums of those places. The first was certainly not architecturally associated with a forum, and the site where we should have expected one was occupied by the public baths; and this appears to have been the case at Chester, but possibly the forum was on the north, as probably it was at Cirencester. So far as we can judge from their imperfect plans, these basilicas differed from those of Silchester and Caerwent in having their chief entrance at one end.

The following table gives the internal dimensions of the

halls of all these basilicas, exclusive of projecting tribunals; but the length in the case of Chesters is uncertain :—

	Length.	Width.	Width of Nave.
	ft.	ft.	ft.
Silchester	233	58	34
Caerwent	122	62	32
Wroxeter	229	67	37
Cirencester	285	78	38
Chester	132 or 180	76	38

It will be observed that while the halls varied greatly in length and width, the width of their naves varied only within the limits of 4 ft., apparently indicating that from 34 to 38 ft. was considered the widest space which could be safely spanned with a timber roof. The widths of the intercolumniations were indicated at Wroxeter and Chester alone, but there was evidence at Cirencester that they could not have been less than 12 ft. 6 ins. The columns in every case were of Corinthian type, with drums of more than 2 ft. in diameter. Mr. Fox's estimate of the height of the Silchester columns is certainly too much for some of these columns, and this has an important bearing upon the roof-treatment of the naves. If we accept the estimate for the Chester columns, the height of the entablature above the floor could hardly have exceeded 23 or 24 ft.; but for so wide a nave, a roof or a ceiling at this height would have been unduly low. This suggests one of two alternatives—a clerestory rising above the aisle roofs, or a second tier of smaller columns rising from the level of aisle galleries. As no fragments of smaller columns which could be reasonably supposed to have belonged to an upper tier have been found on the sites of the Romano-British basilicas, the former alternative is the more probable. The designs and execution of the capitals bespeak an early date, from which we may infer that the Romans, with their usual foresight and imperial instincts, at once provided their newly planned towns with large and strong public buildings, capable of meeting all future requirements; and that they adequately met these requirements is proved by the fact that none of our basilicas shows signs of having been enlarged.

AMPHITHEATRES

The best known remains of amphitheatres in this country are at Caerleon, Dorchester, Richborough, Silchester, and Cirencester; less known are those at Caerwent, St. Albans, Charterhouse on Mendips, Colchester, Wroxeter, and Aldborough. There are circular depressions or enclosures which have been regarded as amphitheatres at Housesteads, Maryborough near Penrith, Tomen-y-Mur in North Wales, Ynys-y-Bordan near Llandovery, St. Piran's Round in Cornwall, and some others. With the exception of those at Richborough, which were subjected to the spade in 1849, these remains have received little attention until recently. Trenching at Housesteads in 1898 proved that the so-called amphitheatre was probably an ancient quarry. Some preliminary cuttings at Caerleon by the Liverpool Association in 1909 gave promising results. The Charterhouse example was more thoroughly explored in 1909, and that of the Maumbury Rings at Dorchester has been in progress since 1908, both under the direction of Mr. H. St. George Gray.

Before its exploration, the Richborough amphitheatre presented an oval depression surrounded by a slight bank, the depth of the hollow being about 11 ft. 6 ins. The trenching proved that the bank covered a wall about 3 ft. 6 ins. in thickness, the space enclosed being an ellipse 200 by 166 ft., with the longer diameter east and west. Three entrances were found, that on the north being 6 ft. wide, and approached by an inclined way, 9 ft. wide, between two wing-walls, the other two—on the west and south—being very imperfect. Within the wall was a sloping bank resting on a stratum of mortar 15 ft. wide. The account of the work is meagre, and it is not quite certain whether the wall was the external one or the inner revetment of the *cavea*.[1]

Both walls were brought to light at Caerleon. The external was substantially built, 5 ft. 6 ins. in thickness, and strengthened by large buttresses on the outer side and smaller on the inner, and 35 ft. within this wall was a thinner arena wall, which originally was at least 7 ft. high. Between the two walls was disclosed the lower portion of the slope of the *cavea*, consisting of the natural

[1] Smith, *Antiquities of Richborough*, etc., pp. 52 and 161.

soil below, and continued upwards by that removed from the general cavity. No trace of seats was observed, and it is probable that these were of timber. The arena floor was a layer of sand. This amphitheatre was elliptical, having an estimated larger diameter of 274 ft., approximately north-east and south-west, and a shorter of 226 ft., the arena being about 204 by 156 ft. The remains of an entrance were found on the south, 9 ft. wide, between massive jambs, the road apparently descending to the arena between two wing-walls. There were also north and east entrances, probably for the spectators, the latter having incurved sides.[1]

The Maumbury Rings were on a larger scale, the external measurements being about 345 by 333 ft. with the longer diameter N.N.E. and S.S.W. Unlike the last two, it was of earthwork and timber. In its present state the banks are highest on the east and west sides, and attain a height of about 30 ft. above the arena. The structure was used as a fort in the civil wars of Charles I, and to adapt it for the purpose considerable alterations were made, especially at the south end. To the same period may also be referred a terraced walk gently ascending the inner slope of the east and west sides. The recent excavations[2] have proved that the arena was 196 ft. long, with a probable width of about 20 ft. less, and that its floor, sunk into the chalk-rock, was covered with gravel. The sides of this depression were vertical for several feet, and had been retained by stout posts ; and several feet behind these there had been a second row of posts to support the foot of the bank. The excavation for the north entrance was 21¼ ft. long, and there were some indications of an ascending pathway on either side by which the spectators reached their places. At the opposite end were the remains of a rectangular recess or enclosure in the arena side, about 13 ft. 6 ins. wide, and 17 ft. 6 ins. deep, reached by a descending road from the south entrance of the amphitheatre behind. Mr. Gray regards this enclosure " as the den for impounding the *bestiae* during the performances when not required for actual exhibitions and combat, the walled pathway to the south evidently being the track by which the animals were brought into it from outside the amphi-

[1] Report not yet published. Personal observation and particulars supplied by Mr. Frank King.

[2] *Interim Reports* for 1908 and 1909.

theatre." And he regards the inner line of posts round the arena as a barrier " over which the *bestiarii* and others engaged in the sports and combats, when hard pressed by the beasts, could jump and secrete themselves without disturbing the spectators." [1]

Contrary to the general rule, the amphitheatre at Caerwent was within the walls of the ancient town; it differed also in its arena, being on the common level. The inner or arena wall encloses an irregular elliptical space, 145 ft. long from east to west, and 121 ft. wide, and at the east end is the gap for an entrance. At a distance of 20 ft. to the south is a short length of the external wall with a right-angled return at its east end, which is probably the side of a south entrance. This amphitheatre was a late construction, several buildings having been pulled down to make room for it, and apparently was never finished.[2]

FORDS AND BRIDGES

So far as can be gleaned from the few recorded remains, the Roman fords were essentially submerged portions of the roads, only more strongly constructed so as to resist the scour of the water. A good example—perhaps the best of any—was a ford across the Trent at Littleborough, near Lincoln, which was removed as a hindrance to navigation in 1820. It consisted of a strongly constructed pavement of large squared stones, 18 ft. wide, the whole being kept in place between two rows of piles ranging from 10 to 12 ft. long, which carried horizontal beams to serve as kerbs.[3] Dr. Stukeley mentions a ford on the Foss Way across the Ivel at Ilchester, and another across the Ebble at Bemerton, near Old Sarum, both strongly paved. Another paved ford, 20 ft. wide, crossed the Calder on the Roman road between Manchester and Ilkley.

In nothing was the constructive genius of the Romans more grandly displayed than in their bridges and bridge-like aqueducts, as many examples in Italy and elsewhere on the Continent testify. The former alone concern us here, as no remains of the latter have been found in Britain. With two or three doubtful excep-

[1] Second *Interim Report*, pp. 19 and 10.
[2] *Archaeologia*, lix, p. 104.
[3] *Arch. Jour.* xliii, p. 12.

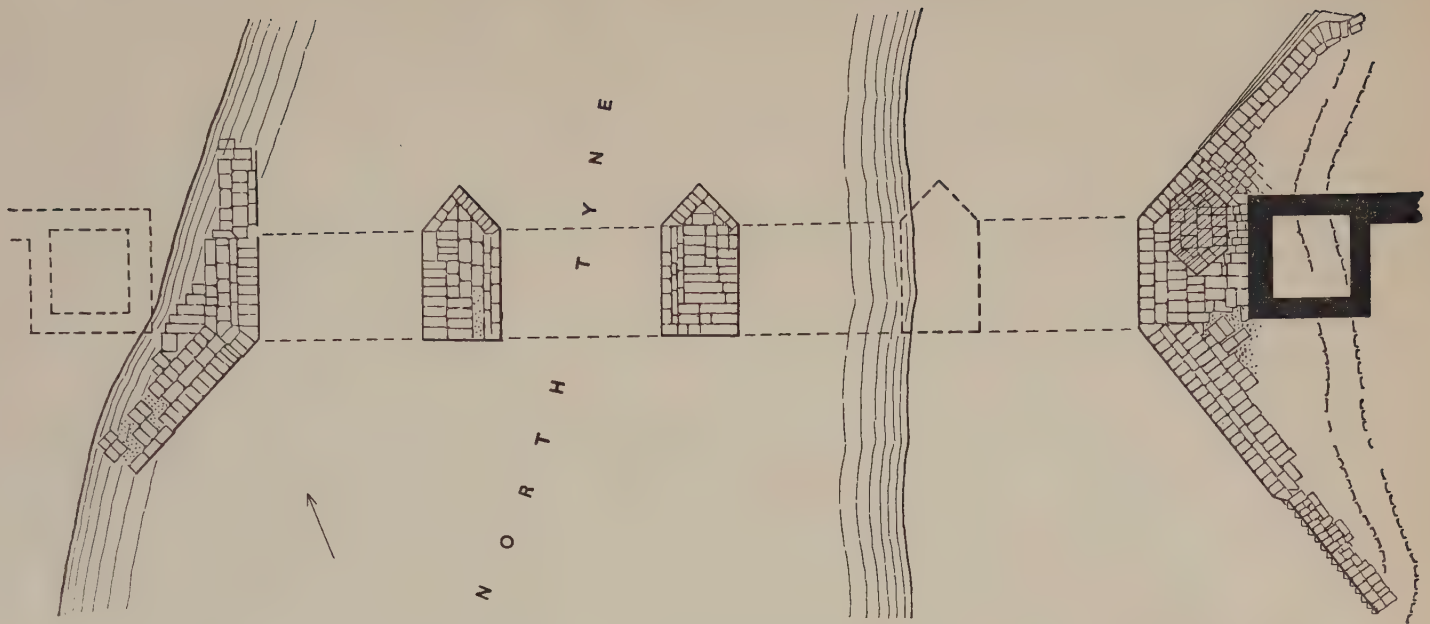


FIG. 66.—Plan of Bridge over the North Tyne near Chesters. (After Clayton.) (50 ft. to 1 in.)

tions, and these only small structures of a single arch each, all that remain of our Roman bridges are the abutments and piers or their foundations; and from these little can be inferred as to their superstructures.

Of the existing bridges that have been attributed to the Roman period, the claim of one deserves to be mentioned, for it rests upon the high opinion of the late Mr. Roach Smith. It is a small and narrow bridge with a fine semicircular arch, over the little river Coch near Tadcaster, on a Roman road leading to that place.

The finest remains of an undoubted Roman bridge in this country are those of one that crossed the North Tyne at Chesters, near Chollerford, on the line of Hadrian's Wall.[1] The plan, Fig. 66, will enable the reader to grasp the chief features. It had four waterways, and was 184 ft. long between the abutments. These abutments were unusually large, and the intervening three piers were each 31 ft. long and 16 ft. wide, with cut-waters to the north. The lateral faces of these structures were 21 ft. 6 ins. wide, indicating a roadway of about that width. Since Roman times, the river has swerved to the west, leaving the eastern abutment some 50 ft. inland. This was uncovered in 1860, and it proved to be a grand work, constructed of huge, well-squared stones, of which five courses remained in one place. The masonry had been laced together with embedded T-headed iron rods, the grooves of which show well in Fig. 67. The west abutment, which is in a more ruined condition, and the piers are of similar construction. That the road-platform was of timber is highly probable, as several of the loose stones have recesses for spars, and voussoirs have not been found amongst the débris. The great size and strength of the abutments is explained by the fact that each supported a tower, which terminated the Wall on either side of the river, and dominated the bridge and its approaches.

Some of the loose stones on and about the eastern abutment show that, although situated on a wild frontier, the bridge was not without ornamental treatment. Conspicuous among these are two column-like shafts—one entire and some portions of the other—each arising from a square block with a string course along the front, and having a conical boss on its summit, the total height being nearly 10 ft. There is also a barrel-shaped

[1] *Arch. Aeliana* (N.S.), v, p. 142; vi, p. 80.

FIG. 67. EAST ABUTMENT OF ROMAN BRIDGE NEAR CHESTERS

stone, 2 ft. 6 ins. long, with a row of eight stud-holes around its middle, the whole resembling the nave of a wheel with its spoke-holes. Mr. Sheriton Holmes suggested that these worked stones appertained to a swing-opening in the span of the bridge next the abutment, of which the barrel-shaped stone was the counterpoise.[1] The main structure of the bridge is generally attributed to Severus, but in it is incorporated work of an earlier and of a later period. Embedded in the east abutment are the lower courses of the water-pier (indicated on the plan) of an older and narrower bridge. The masonry is of the same massive description as the abutment; but the stones are held together by dovetailed cramps. The later work consists chiefly of extensions of the wing-walls of the abutments. A still later work is seen in a curious covered way which winds through the abutment from north to south.

If the remains of a bridge which were found buried and to some extent supported in the silt that filled a small creek at Wallasey, near Birkenhead, were Roman—and it is reasonable to think they were—they supply valuable data as to the timber-work of a Roman bridge. This bridge was 100 ft. long and 24 ft. wide; and its platform rested upon the rocky sides of the channel at its extremities, and upon two intervening stone piers that had fallen. Each span of the roadway was supported by four compound bearers, 33 ft. long, of three well-squared oak beams each, which carried the transverse rafters. The mortice-holes showed that the bridge had cross-railed parapets.[2]

When the ancient bridge over the Tyne at Newcastle was demolished in 1771, it was found that the medieval builders had availed themselves of portions of the stone piers of their Roman predecessors, and that the foundations of these were laid on oak piles. Another bridge crossed the Tyne at Corbridge, and a survey of its remains, made in 1907, shows that it was about 462 ft. long, with eleven waterways, and piers which resembled those at Chesters. A Roman bridge on stone piers crossed the Nene, near Caistor; and the old Caerleon bridge over the Usk, also of stone and timber, which was removed about a century ago, is said to have been Roman. A timber pier (apparently Roman) with a cutwater at each end has recently been exposed in the Wye at Chepstow.

[1] *Arch. Aeliana* (N.S.), xii, p. 124; xvi, p. 322. [2] *Roman Lancashire.*

CHAPTER X

TEMPLES, SHRINES, AND CHURCHES

FEW remains of Roman age in this country have been satisfactorily identified as temples. It is probable that now and again a temple has been imperfectly excavated and has not been recognized as such, because it has not conformed to the familiar classical models. It has been more than once pointed out on these pages that it is not safe to assume that what was true of the central provinces of the empire was necessarily true of Britain; and in the few examples of temples to follow, several differ considerably from the usual classical models.

The remains of a temple, which from an architectural point of view was perhaps one of the most notable buildings in Roman Britain, were partially excavated at the north-west corner of the Roman baths at Bath in 1790.[1] Unfortunately no plan is extant, but sufficient of the sculptured stones of its façade were recovered to allow of an almost complete restoration. The pediment was of the steep form usual in Roman architecture, and its typanum had for its chief feature a shield supported by two Victories—a frequent device in Roman art. On the shield was a Gorgon's head with the usual wings and serpents intertwined with the hair, and, curiously, a moustache and beard in addition; and this was enclosed with two concentric bands of oak leaves and acorns. The rest of the field was ornamented with military trophies, and on one of the remaining stones is an owl. The cornices were rich and were sculptured with flowers and fruit, and several pieces of half-capitals and drums of fluted columns of Corinthian design were found. The remains indicated a structure of about 26 ft. in width and of somewhat greater elevation. It is evident that we have here a pseudo-

[1] Lysons, *Rel. Rom. Brit.* *Victoria History* (Somerset), i, p. 229.

peripteral temple of thoroughly Roman type so far as its main features were concerned, but its sculptures were singularly bold and free for the period. The Gorgon's head and the owl are the attributes of Minerva, so that it is practically certain that this temple was dedicated to Sulis, the goddess of the hot springs, whom the Romans identified with Minerva. Whether the moustache and beard had a local significance, or was a vagary of the sculptor (who presumably was a native), is uncertain.

Of different type were two temples, the remains of which were discovered in 1890 near the east gate, Silchester.[1] Unfortunately their sites could not be fully excavated, but sufficient was disclosed to show that they were square structures, each enclosing a central square chamber or *cella*. The larger building was 73 ft. square. Its outer wall was 3 ft. thick, and remained to a height of about 5 ft. above the Roman level, the outer face being plastered and painted red. The inner wall was thicker, and remained to a similar height. The whole space within the outer wall was packed with sandy clay, on which, at a height of $7\frac{1}{2}$ ft., were patches of a concrete pavement, which in the *cella* was composed of broken brick, dark limestone, and some other stone, while that of the surrounding space was of brick only. This raised platform was the *podium* of the temple, a characteristic feature of Roman temples and of Etruscan origin. That the superstructure was of an ornate description was proved by the fragments of Purbeck marble-linings and fine plaster mouldings about the site. The smaller temple was 50 ft. square and of similar construction, but in a more ruinous condition.

Messrs. Fox and Hope remark that similar buildings have been found in France, notably two at Poictiers within a common enclosure. These, as also other French examples, had the *podium* and were entered on the east side by a flight of steps. No steps were found at Silchester, but unfortunately the east sides could not be fully excavated. With regard to the superstructures, they were of opinion that while the outer wall of the larger temple was strong enough to carry the columns of a peristyle, the corresponding wall of the smaller temple was too thin for this purpose, and that in any case the roofs were of timber. As no fragments of stone columns were found about the sites, the columns, assuming their existence, were probably also of

[1] *Archaeologia*, lii, p. 744.

timber. If, on the contrary, these temples lacked peristyles, their retaining-walls were probably surmounted with openwork parapets. Both temples were in a walled enclosure, to the north wall of which were attached the remains of two small buildings, one of which consisted of an oblong room with an apse on its west side, and possibly was a shrine.

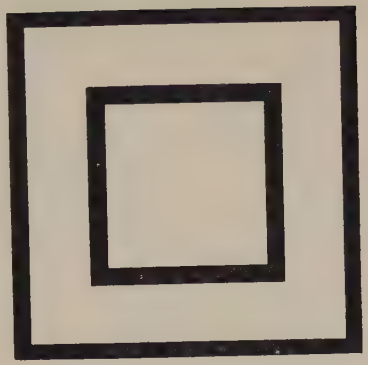
A smaller rectangular temple was excavated in Insula XXXVI, in 1907.[1] It was 36½ by 35 ft., with external walls 18 ins. in thickness, and an entrance in the east end, 9 ft. 10 ins. wide, in front of which was the projecting foundation of the steps up to it. The *cella* was nearly 16 by 14 ft., with thicker walls, and an entrance at the corresponding end. Near the opposite end was the brick edging of a low platform about 3 ft. wide. The floor of the ambulatory was of red mosaic, but its height is not stated, and the *cella* seems to have also had a mosaic pavement. Several fragments of stone capitals and shafts of different sizes found near the site, may have belonged to this structure. In the *cella* were some fragments of a life-sized male statue which apparently had been purposely shattered. As far as could be made out, the figure was in armour and held a cornucopiae. Several pieces of inscriptions were also found near the temple, and one conjecturally refers to Mars. Twenty feet to the east of the temple was uncovered the small foundation of apparently an altar.

A circular temple has also been found in Silchester.[2] Each of the two rings of wall was a 16-sided polygon, the outer 2 ft. 5 ins. thick, and the inner slightly thicker, with quoins of blocks of ironstone. The whole structure was considerably reduced below its former floor-level, but a loose fragment of fine mosaic may indicate that its floor was of mosaic. It is evident that these thin walls could not have carried a heavy superstructure. The polygonal form is a favourable one for a peristyle, as the need for a curved architrave would thus be dispensed with. The roof of the *cella* may or may not have been raised above that of the peristyle, but in any case it would have been of timber construction and conical in form.

The remains of an octagonal building, 63 ft. in diameter, were found nearly sixty years ago at Weycock,[3] near Laurence Waltham, Berkshire, which so closely resembles the last Silchester

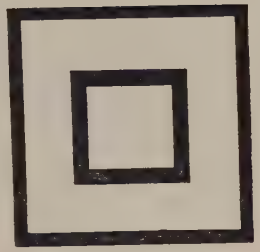
[1] *Archaeologia*, lxi, pp. 206, 474.
[2] *Ib.* liv, p. 206.
[3] *Arch. Journ.* vi, p. 114.

WEYCOCK

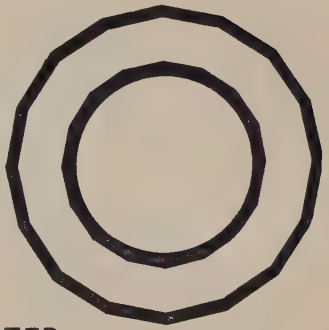


SILCHESTER

WEST MERSEA



SILCHESTER



SILCHESTER

FIG. 68.—Plans of Temples, square, polygonal, and circular. (40 ft. to 1 in.)

example that it can hardly be doubted that it also was a temple. The walls were 3 ft. 6 ins. thick, and remained to the height of 8 ft.; but beyond this little more can be said of it, except that there were indications of many ancient buildings in the vicinity. More remarkable were the remains of a circular buttressed building, 65 ft. in diameter, discovered at West Mersea, Essex, in 1849.[1] It resembled a cogged wheel in plan, with six spokes radiating from a small hexagonal cell, and the walls were of tiles, 3 ft. thick, and upon a concrete foundation. The site is described as somewhat raised, and many roofing-tiles lay scattered about. The twelve buttresses are strongly suggestive of being the supports of as many columns, which would be of timber, as no fragments of stone columns are reported. The six 'spokes' may have supported an inner ring of as many columns between the outer ring and the hexagonal *cella*.

In the foregoing examples of temples we may distinguish two types. The Bath temple and apparently the third Silchester temple, were of the normal classical model, that is, with a front and back architecturally distinguishable from the sides, and adapted for a gable roof. This may be conveniently termed the 'longitudinal' type. The other examples were square, polygonal, or circular, and while each must have had a front containing the access, this did not affect the all-round symmetry of the main fabric, nor probably the main architectural features. These we may distinguish as of the 'central' type.

At Caerwent and Lydney, Fig. 69, are the remains of two temples of the 'longitudinal' type, but differing in a marked degree from the foregoing. The dimensions of the first[2] were 42 by 45 ft., and it lay to the east of the Forum and about 80 ft. from the main street. The *cella* had an apse at its north end, and its side walls were produced north and south to form pilasters, which had responds on the inner sides of the outer walls, indicating that the intervals had been arched or more likely spanned with the main longitudinal timbers of the roof. Externally the temple had six buttresses, three on each side. The spaces between the walls had been purposely filled up with broken building material and earth, to raise the floor. No remains of an entrance were detected, although the walls remained to the height of about 2 ft. above their footings, nor was there

[1] *Proc. Soc. Ant.* 2, xvi, p. 426. [2] *Archaeologia*, lxii, p. 4.

a trace of the flooring. That the former was in the south end was proved by the remains of a walled approach, 10 ft. wide, which possibly may have been roofed; and a plot of rubble of the same width between the outer wall and the *cella* was undoubtedly the foundation of the floor within the entrance. As it was about 18 ins. higher than the approach floor, it must have been reached by two or three steps, of which, however, only bare traces remained. At the opposite end of the approach was a narrow building, about 66 ft. long, on the street side. This structure had a mosaic pavement and an apse at the east end.

FIG. 69.—Plans of Temples at Lydney Park and Caerwent. (40 ft. to 1 in.)

It is clear that the approach was reached from the street by an entrance in the south wall, as here the mosaic pavement was much worn.

The temple at Lydney [1] was not only remarkable in itself, but it formed part of a remarkable group of buildings. The north side of the Severn valley at this place is of old red sandstone, rising to a height of 500 ft. or more, and is deeply indented by small streams from the north. On two of the intervening precipitous spurs are prehistoric camps of the 'promontory' type, strongly intrenched across the necks which connect them with the higher ground behind; and within the larger of these are the

[1] Bathurst and King, *Lydney Park*; and personal examination.

remains of the group of buildings mentioned above. The temple stood within a large enclosure, bounded on the west and south by a wall which crested the brow of the spur; on the east by a spacious house or *hospitium*; and on the north by a long range of rooms with a portico in front, most or all with rich mosaic pavements; while in the north-east corner of the space was a gate into a large paved yard with an extensive bath-house along its north side. The enclosure was reached by a gently ascending road which entered it through a wide gate at the south-west angle.

The temple was 88 by 62 ft., and resembled the Caerwent example, except that it had four chapel-like enclosures, two on each side, within projecting recesses, and three internal shrines at the north end of the *cella*. The former enclosures were separated from the ambulatory by thin walls which probably supported *cancelli* or parcloses, and were entered at their south ends. The temple was entered at the south, where are the foundations of apparently a flight of steps. On the east side of the entrance was a small square recess in the external wall, and beyond this a square room, attached to the east wall of the temple, which may have been the sacristan's abode. On the west was a strongly constructed apsidal chamber at the south-west corner of the *cella*. The floors of the *cella* and the chapels were of ornate mosaic, as probably also was that of the ambulatory—all on the same level, which, in consequence of the natural slope of the ground to the south, was about 3 ft. above the ground at that end, and slightly below it at the opposite end.

Little can be gleaned as to the structures of these temples above their floor-levels. The external buttresses of both, the internal pilasters of the end walls at Caerwent, and the chapel projections at Lydney, are hardly consistent with the view that the outer walls supported peristyles. More likely they were carried up as walls, and the buttress-like projections as pilasters. The roofs, we may be sure, were of longitudinal form and ended in pediments. There must have been windows or other openings in the outer walls to admit light to the ambulatories; and if each temple had a single roof, it is probable that the *cella* had skylights or borrowed light through side openings from the ambulatory. The four broad internal pilasters of the *cella* at Lydney evidently mark the positions of the roof-trusses, and would be structurally advantageous if the intervening walls

were pierced. If reconstructed on these lines, these temples would agree in all essentials with the familiar classical peripteral type, with the difference that the open peristyle of the latter has become a cryptoporticus, a change which might very well have come about in a cold climate.

The most interesting feature at Lydney is the wealth of inscriptions, votive tablets, and other objects relating to the deity to whom the temple was specially dedicated—Nudens, Nodens or Nodons, as his name is rendered in these inscriptions. These are latinizations of the British Nudd, or Lludd, the 'Silver-handed,' benign dispenser of health and wealth. He was essentially a river-god; hence the appropriateness of a temple on a knoll overlooking the Severn. The god is depicted on a thin bronze tiara, which may have adorned the officiating priest.[1] The most interesting feature of all, however, was a portion of the border of the mosaic pavement of the *cella* that remained in front of the recesses at the end. Its decoration consisted of fishes and sea-monsters, and it had an outer band containing a circular hole, 9 ins. in diameter, set in the midst of an inscription. This hole was bordered with red and blue bands, and simply opened into the ground below. It may have received libations offered to the god, and may have been, like the cleft at Delphi, the source of an oracle. The inscription, according to Mr. C. W. King, was to the effect that the pavement was defrayed out of contributions and placed there by Flavius Senilis, the head of the religion, under the superintendence of Victorinus, "the interpreter of the Latin tongue," but this reading is doubtful. Altogether we have in this remarkable group of buildings a sanctuary of the first importance, and one worthy further investigation.

Some remains in a valley to the west of the Roman fort of Carrawburgh, from which a copious stream formerly issued, had long been supposed to relate to a bath, but proved upon excavation in 1876 to be the remains of a temple dedicated to a water-goddess.[2] The structure was 46 ft. long and 44 ft. wide, and its external wall 3 ft. thick. The soil within was raised above the surrounding ground, but its original height was greater. In the centre of the space was a massively constructed

[1] For further particulars of Nodens and his cult, see *Roman Era in Britain*, Chap. vi.

[2] *Arch. Aelian.* N.S., viii, p. 20.

cistern, 8 ft. 6 ins. by 7 ft. 9 ins., and 7 ft. deep. This was the place where the spring gushed out a few years before. Within the past century there were many worked stones and the shaft of a column on the site, which probably belonged to the superstructure. Piecing all this evidence together, we seem to have here a temple of distinctively Roman type—raised on a *podium*, with a peristyle, and, to judge from its oblong shape, surmounted front and back with a pediment. We are left in uncertainty as to the *cella*, whether it was represented by the walls of the cistern, or was of larger extent and enclosed the cistern.

The cistern yielded a remarkable assemblage of sculptured and inscribed stones, altars, coins, brooches, rings, and other objects, and the inscriptions proved that the temple was dedicated to the goddess Coventina. On one of the stones she was represented as resting on the leaf of a water-lily, and holding in the right hand a palm-like branch ; and in the inscriptions she was referred to as Dea Nimfa Coventina, Dea Sancta Covontina, Covetina Augusta, and simply Dea Coventina. The general testimony of the various objects showed that the temple was in existence as early as Pius and as late as Gratian. Temples similarly dedicated to water-deities have been found on the Continent. One specially referred to by Mr. Clayton as having yielded a similar large assemblage of altars, sculptures, and offerings, was found at one of the sources of the Seine in the Department of the Côte d'Or, and it was dedicated to the goddess Sequana, the ancient name of the river. As no other dedication to Coventina is known, she was probably a local deity, and possibly her name was derived from a forgotten name of the stream of which her spring was the source.

What was described as a small temple was discovered at Benwell on the Wall of Hadrian in 1862.[1] It was a square structure with an apse on the south side and indications of an entrance on the north, the total length being about 16 ft. On either side of the apse had stood an altar which had fallen, the one dedicated to Anociticus and the other to Antenociticus; but probably the same deity was intended. The life-sized head of a male, and some fragments of possibly another and female statue, as also a small piece of an inscription, lay on the site. Outside were found portions of the capitals and shafts of columns. It is

[1] *Arch. Aelian.* N.S., vi, p. 169.

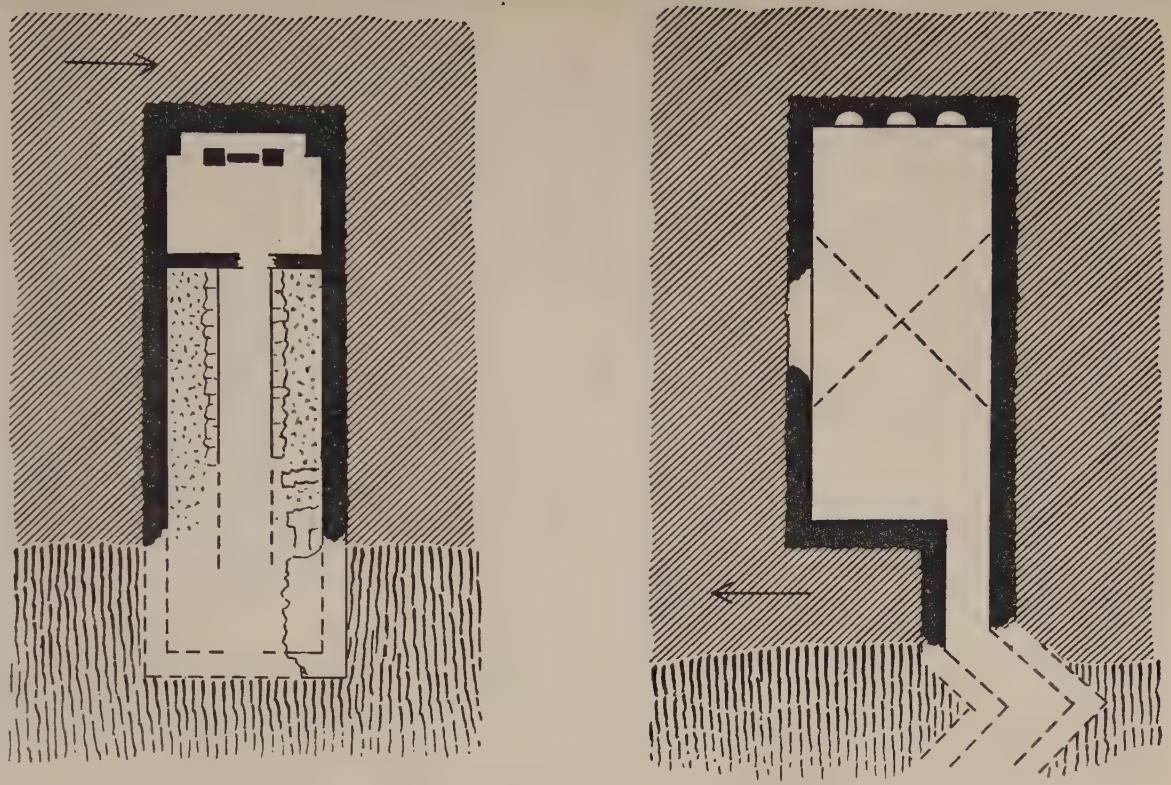


FIG. 70.—Plans of Mithzaic 'Caves' at Housesteads and Burham. (20 ft. to 1 in.)

probable that the structure was the *cella* of a temple, as "a little apart" from the east and west walls were two lines of foundation which, it was conjectured, supported a portico.

Although numerous inscriptions and sculptures bear witness that the worship of Mithras was firmly planted in Roman Britain, only one undoubted 'cave' has been discovered. This was a small but typical example about a quarter of a mile south of Housesteads, a portion of the remains of which were discovered in 1822, and the rest in 1898.[1] This *mithraeum* was constructed in an excavation about 50 ft. long and 20 ft. wide in the side of a hill, at a spot where a spring issues—an essential in the worship of this eastern god. The depth of this depression increased to 5 ft. at its west end, through the rise of the ground in that direction. The remains were found in 1898 to be in a very reduced condition, but sufficiently showed that the internal dimensions were about 54 by 16 ft. The west end, which would contain the vestibule, was almost entirely gone. But the middle portion or body of the structure still retained the central passage or nave, 6 ft. 6 ins. wide, between the two raised platforms or 'aisles,' upon which the worshippers knelt during the celebration of the mysteries. Each platform was constructed of hard clay on a foundation of broken stone and supported by a retaining-wall, which probably had been surmounted with a parapet. The original height of the platforms was at least 2 ft. The nave was flagged; and on its north side towards the west was a sunk tank to receive the water of the spring. About the middle of the building were the remains of a higher floor on oak planks resting on stone chippings, of such a width as to leave a space or gutter on either side to carry off the overflow from the trough. The discovery of 1822 was certainly that of the inner cell or shrine at the west end of the building. It seems to have been entered by a narrow doorway a trifle north of the middle of its east wall, and in the west wall was a wide but shallow recess.

This cell when dicovered had standing *in situ* near the back a curious sculptured slab, representing Mithras emerging from the mystic egg—his miraculous birth—with outstretched arms and holding a sword and a torch, the whole being encircled with an oval frame carved with the signs of the zodiac. This stood between two altars dedicated to the Invincible Mithras, and in

[1] *Arch. Aelian.* O.S., i, p. 263; N.S., xxv, p. 255.

the north-east corner was a smaller one to the Sun. Besides these there appear to have been several small uninscribed altars. Scattered about the floor were several fragments of a large 'taurine' slab which with little doubt originally occupied the recess at the back of the cell. The slab depicted Mithras in the mystic cave in the act of slaying the bull, the first-born of creation, in order that the rest of animals and plants might be born of his blood, and on either side a youthful attendant garbed similarly to the god, the one with a torch upright, and the other with one reversed, probably emblematic of the summer and winter solstices.

At Rutchester,[1] in a similar situation to the south-east of the fort, some indications of a mithraeum were discovered in 1844. About the site were found five altars, of which four were inscribed and were dedicated to Mithras. A short distance away is a large cistern 12 ft. long, hewn out of the rock, and locally known as ' the bath.'

A curious subterranean chamber, discovered at Burham in Kent, in 1894,[2] was almost certainly a Mithraic ' cave,' although there were no remains of altars or other objects to indicate that it had a religious use. It was built of dressed chalk blocks in a sandbank, and its internal dimensions were 39 ft. 6 ins. by 19 ft. 6 ins., with a passage entrance 4 ft. wide at the west end. It had been covered with a barrel vault, the lower portions of which remained at a height of about 5 ft. 9 ins. from the floor. Across the middle were the remains of a transverse groin of the same width and height as the main vault ; and in the north wall below the groin was a wide splayed opening at the bottom of an upward shaft for the admission of light. Most of the entrance passage had fallen away, but sufficient remained to show that it had a zigzag form, evidently to prevent the interior of the chamber being seen from the outside. It had an arched roof and a total height of 11 ft., while the height of the chamber must have been somewhat greater. At the opposite end of the latter, and about 3 ft. 6 ins. above the ground, were three round-arched niches, 4 ft. 8 ins. high, 2 ft. 10 ins. wide, and 2 ft. 2 ins. deep. The floor of the apartment seems to have been of brick-concrete ; and that the structure was of Roman age may be inferred from

[1] Bruce, *Roman Wall*, p. 127.
[2] *Proc. Soc. Ant.* 2, xvi, pp. 105, 248 ; xvii, p. 96.

the fragments of Roman pottery and a coin of the Constantine period found within. A small spring made its appearance outside the west wall during the excavation.[1]

SANCTUARIES, SHRINES, ETC.

Under this head are grouped various small structures, other than temples, where religious worship of some kind or other was rendered. The remains of these in this country are too few to admit of satisfactory classification, and they are too vague to be studied apart from the elucidation afforded by the kindred structures in Pompeii and elsewhere in Italy. The best course will be to begin with domestic shrines.

Every Roman house, at least in Italy, had its guardian spirits and divinities, the Lares, Penates and Genius, to which worship and offerings were daily rendered, and sacrifice on special occasions. The Lares were the beneficent guardians of the household, and were represented as two youths clad in short tunics, lightly stepping, and holding uplifted in the one hand a drinking-horn, from which wine streamed into a patera held in the other. The Penates were the protectors of the stores and the storehouse, and were those gods to whom the family was specially devoted. The Genius was the tutelary divinity of the head of the household, and was represented as robed in a toga, which was drawn over the head as in the act of sacrificing. The Lares and Genius were especially associated, and were usually grouped together, the latter standing between the former. They were shown either as little figures or as paintings, which in Pompeii were generally enshrined in a small niche in a wall of the atrium, kitchen, or dining-room, with an altar or shelf below for offerings, and on each side of this was a serpent gazing at or approaching the offerings. The last were nearly always depicted in paint, as sometimes was also the altar. Whatever these serpents originally signified, they came to be regarded as personifications of the Genii of the master and mistress of the house, that of the former being distinguished by a crest ; and if the proprietor was unmarried, one serpent only was shown. This

[1] For inscriptions recording the erection or restoration of temples in Britain, see *Roman Era in Britain*, Chap. vii.

was the domestic shrine in its simplest form. The niche may be elaborated into the façade of a small temple; or take the form of one on a raised base or podium, attached to a wall of the atrium, or, more rarely, the *aedicula* stood free in the garden. More rarely still, the shrine was enclosed in a chapel, which might be a special room in the house or a detached building. The place or the room where the shrine was set up was the *lararium*.

Several domestic shrines have been identified with more or less certainty at Silchester.[1] The best example was furnished by House 2, XIV, where the *lararium* was a narrow room projecting into the main corridor. Within, and set back towards the farther end, were the foundations of a small oblong structure, 6 ft. 3 ins. by 6 ft. 9 ins., in front of which was a decorated panel in the mosaic floor. There is little doubt that this structure was the podium of an *aedicula*; and probably a fragment of a small column found close by belonged to it. In the upper end of the courtyard of House 1,[2] in the same insula, were the foundations of a square structure of similar size, with a wide step in front, which seems to have been an open-air *aedicula*. The next example, from its larger size, should perhaps be regarded as the chapel of a shrine, rather than a shrine itself. Its remains were found near the courtyard of House 2, XXIII,[3] and related to a building about 13 ft. 6 ins. square within, which appears to have had a timber floor and an open front flanked by two pilasters. This building replaced an earlier and smaller one on the same site, and was in its turn altered by the addition of a porch-like structure to its front. It was observed on page 160 that the domestic shrine at Chedworth was probably at the end of a narrow lobby, from which the principal room was entered. Similar narrow spaces may be seen on the plans of many of the larger houses of the era, sometimes with their upper portion entered by a doorway, and on the other plans are small rooms adjacent to the principal rooms. It is not unlikely that some of these were *lararia*. The occasional small room attached to the entrance lobby may also have been a *lararium*, for in late Roman times the shrine was sometimes placed near the entrance.

The evidence for the worship of the old Roman domestic gods in this country is thus very meagre; but if the general Pompeian rule of placing them in niches prevailed here, this is

[1] *Archaeologia*, lv, p. 237. [2] *Ib.* lv, p. 224. [3] *Ib.* lvii, p. 234.

not surprising, as the houses with us are reduced to too low a level for these to remain. Nor can the fewness of the figures of presumably domestic divinities which have been discovered be regarded as evidence of much weight, for these divinities may often have been represented by paintings, or have been of wood; or, as has been suggested, Christianity may have made sufficient headway for the general abandonment of their worship.[1]

The evidence for public shrines is perhaps a little stronger. Just as the Roman households had their lares, so had the streets and the towns theirs—*Lares compitales* and *Lares presides*; and besides these, there were other public shrines. The street shrines of Pompeii were as varied as the domestic, and in a general way resembled them. A niche in a wall containing the several divinities and a shelf or altar for offerings, in part or even the whole simply rendered in paint—such was the ordinary street shrine; but occasionally it was enclosed in a chapel or *sacellum*. The Sanctuary of the City Lares was an imposing building on the east side of the Forum, in which the guardian divinities were enshrined in a large apse surmounted with a semi-dome, with a square court open to the Forum, on each side of which were niches presumably for the penates.

It has been supposed that the large female figure with the turreted crown, which appears to have stood in front of the central apse of the Basilica at Silchester (p. 219), represented the Genius of the town, and that this apse was the shrine. Doubtless it personified the town; but the analogy of Pompeii rather points to the large shallow apse on the north side of the Forum as the site of the municipal shrine. In a similar position in the Forum at Caerwent has recently been discovered what appears to be the remains of the podium of a temple. The only other remains that were in a marked manner suggestive of a public shrine at Silchester were on the north side of Insula VII. These consisted of a small room on the street side with an apsidal back, between two smaller rooms, but they were too fragmentary for it to be determined whether the middle room had been open to the street.[2]

[1] A sculptured Matres group with a small altar in part, all resting on a slab and found at Ancaster in 1831, probably belonged to a shrine. *Collect Antiqua*, v, p. 149.

[2] *Archaeologia*, liv, p. 204.

Some remarkable remains found at Caerwent, in 1901,[1] were suggestive of a public shrine and its *sacellum* of a rude description. They indicated a room about 17 ft. square, with a row of mortice-holes in a strong kerb along the front, and with a space along the back divided off by a wooden partition containing a door, this space having been subdivided into two small chambers. In front of the partition, and on one side of the door, was a platform of mortar and gravel 4 ft. square and 18 ins. high, with three steps in front. On this platform lay a rude sandstone head, less than life-size, and flat at the back as though it had been placed against a wall. The mortice-holes may have received the tenons of a fence or screen, and possibly the platform was the podium of an *aedicula*, in which the figure of a god was placed at the back. Rude as were the remains, their resemblance to a street *sacellum* in Mercury Street, at Pompeii, is by no means remote.[2]

It would be strange if here and there some wealthy proprietor did not grace the spring or stream which supplied him with water, and honour the divinities who dwelled in or by it, with a shrine. The freedom-loving nymphs of founts, grottoes, forests, and meadows were favourite subjects in art, and were frequently delineated on the mosaic pavements of this country. We have referred to a little edifice at Chedworth as a *nymphaeum* (p. 161). It was rectangular externally, with an open front, two side walls of no great elevation and an apsidal back, the internal dimensions being about 19 ft. in width and 25 ft. in depth. The apse was probably surmounted with a semi-dome, and the interior appears to have been painted a bright red. In the midst of its floor was a sunk octagonal basin, about 9 ft. in diameter, which received water by a stone channel from an orifice in the apse, and a similar channel received the overflow on the opposite side of the basin. These, however, were not parts of the original structure. There was an earlier floor at a lower level, and this had a small triangular receptacle for the water on one side of the front ; while on the other side was found a plain altar with a diminutive focus, buried under the later floor. This altar goes far to prove the sacred character of the place. This little edifice must have been a pleasant retreat in its day, the silence

[1] *Archaeologia*, lviii, p. 149 ; and personal observation.
[2] Mau, *Pompeii*, p. 229.

broken by the musical plash of the water and the song of the birds.

CHRISTIAN CHURCHES

South-east of the Forum at Silchester were uncovered in 1892, the scanty remains of a small Christian church.[1] "Centuries of ploughing," wrote Messrs. Fox and Hope in their report for that year, "have wrought such havoc with the walls that only in the apse and in the north chamber does anything remain above the floor-level, and here only to the height of some inches. Owing to the slope of the ground, the rest of the walls are reduced to mere foundations. It is therefore somewhat difficult to say with certainty what were the arrangements of the building." The plan, Fig. 71, is consequently very imperfect—no doors or windows are shown, nor the usual colonnades of an early Christian basilica.

It was a small edifice, being only 42 ft. long and 27 ft. wide. As a width so narrow could have been easily spanned with a single roof, it may be reasonably inferred that the basilica was already the conventional form for a church. The pagan temples, although occasionally utilized for churches, were not adapted for the congregational worship of the Christians. The civil basilica, on the other hand, was designed for the concourse of people, and from long usage had come to be regarded as peculiarly the type for halls of assembly. It is not surprising, therefore, that the Christians should have eventually adopted the type for their own assemblies. The tribune became the chancel, a word derived from the screen or *cancelli* which divided it from the hall. The praetor's chair was now occupied by the presiding priest, and the seats on either side by the lesser clergy. The heathen altar was replaced by the eucharistic table. The body of the hall was allotted to the choir and the different orders of the worshippers, the division into nave and aisles helpfully contributing to the groupings, and so coming to have a ritual significance. The church was entered through a space extending the full width of the building. This in the West usually took the form of a portico, forming at first the fourth side of an open court—the 'atrium'—through which the main building was approached.

[1] *Archaeologia*, liii, p. 563.

When the atrium disappeared, the fourth side was retained, not only because it formed an agreeable vestibule, but because it was the part to which certain grades of penitents were admitted. In the East, however, it was represented by a closed-in *narthex*,

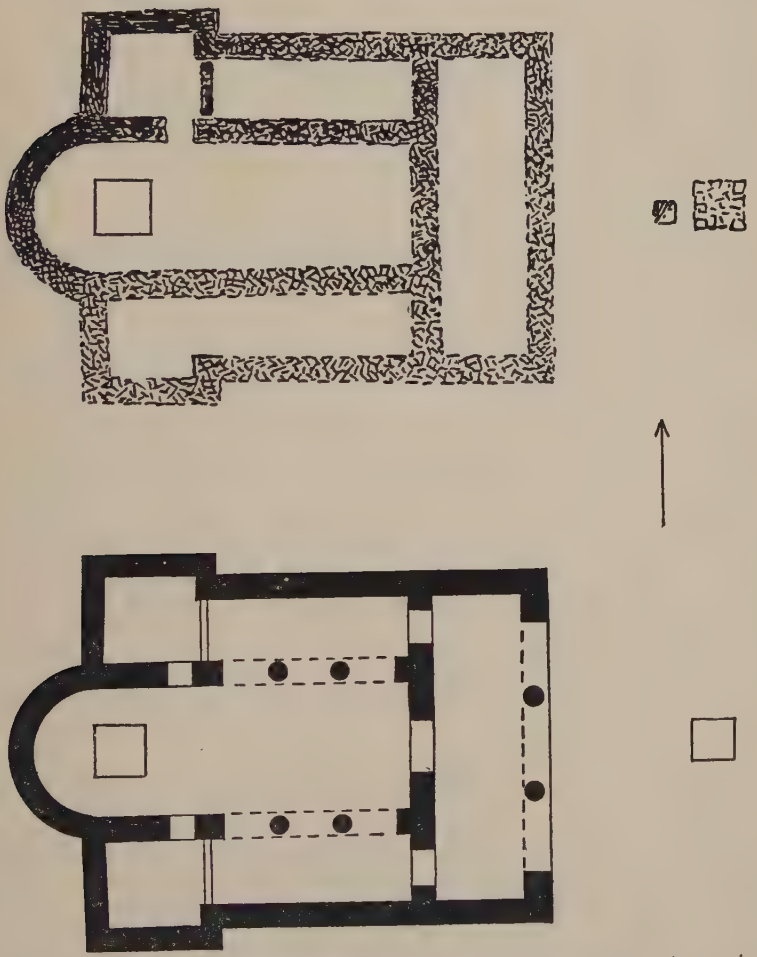


FIG. 71.—Plan of Church at Silchester and conjectural restoration. (15 ft. to 1 in.)

which was structurally within the main fabric. In the atrium, or somewhere in the open space in front of the building, was a large basin or fountain—the *cantharus*—where the people washed their hands before entering the church.

The Silchester nave had a plain mosaic floor, except that immediately in front of the apse—the normal site for the holy table—was a square panel of finer work, with a centre of black and white checks, surrounded with a border of red and grey lozenges on a white ground and between black bands. Apparently no trace of flooring was found in the aisles and transepts, so that it is probable that they were of less enduring materials; but a patch of red mosaic was left in the narthex. Between the mosaic panel and the end of the apse there was sufficient space for the officiating priest, who, according to the custom of the time, faced the people when celebrating. The transeptal spaces appear to have been screened from the aisles, but to have had openings to the nave. They were probably used by those who helped in the ministrations of the church, being the *prothesis* and *diaconicum* of early Christian writers. The excavation revealed little else except that the walls had been decorated in colours.

In the open space in front of the narthex was a foundation of tiles about 4 ft. square, and close to its west side a shallow pit lined with flints. This foundation probably supported the cantharus, and the pit would receive its waste water. No trace of the usual atrium was found; but as the church stood in the centre of an oblong space, 130 by 100 ft., bounded on three sides by streets, it may, contrary to the rule, have stood within the atrium. The western direction of the apse presents no difficulty. While it was customary for the early churches to range east and west, the eastern position of the altar was not insisted upon as in later times. In Rome alone many of the early basilicas including those of St. Peter, St. Mary Maggiore, and St. Clement, had a western orientation.

This little Silchester building is the only one in Britain that has been identified as a church of the Roman era. Some existing churches have been supposed to be of this era, as St. Martins, Canterbury, and those of Reculvers, Dover Castle and Lyminge, but all that can be said of them is that they are built of Roman materials; there is no evidence that they even occupy the sites of Roman-British churches. That the remains of only one undoubted church of this era should have been discovered is remarkable; but so little is known of Romano-British Christianity, that it is quite uncertain whether the basilica type was rigidly adhered to. In Silchester, the remains of several small buildings

have been found which conceivably were churches, one in particular, at the south-east corner of Insula XXI—an oblong building with an apse at the north end and a doorway on each side at the opposite end. It approximates to the basilical form, and seems to have been a little assembly hall of some kind. [1]

In 1909 a small building was discovered at Caerwent, which has some claim to be regarded as a church. It consisted [2] of a rectangular apartment without any traces of pillars, with a wide opening on its west side, which possibly may have been arched, into a transeptal space with a western apse. We have here the elements of an early church, without any structural division of its body into nave and aisles, and without a narthex; but the north and south recesses of the transeptal space answer to the *prothesis* and *diaconicum*. Attached to its south side was a yard with two rooms on the west. This structure was preceded by other buildings on the site, and had in its turn been destroyed and built over by others. We know that the Diocletian edict of A.D. 303 ordered all churches to be destroyed—may not this have been one of the destroyed churches?

[1] *Archaeologia*, lviii, p. 95. [2] Personal observation.

CHAPTER XI

CONSTRUCTION

Walls, Roofs, Floors, Doors, and Windows, Heating of Rooms, Water-Supply, and Treatment of Internal Walls

THE work of the Roman builder is more easily distinguished in this than in other countries, for, with the passing of the empire, building became well-nigh a lost art with us for several centuries. On the Continent, and especially in Italy, Roman art survived, but under the new conditions it rapidly changed, and thus changed was reintroduced into Britain under the later Saxon kings—the advent of an old friend in new guise, for Roman had become Romanesque. Out of this developed the graceful pointed styles of the medieval period, when the builder's art attained its zenith in this country. The whole spirit of architecture was now transformed. Columns, arches, mouldings, and sculpture showed little of their Roman parentage, and not much experience is needed to distinguish their fragments from those of Roman work. With the Renaissance which followed, the case is different. Roman forms and decoration were more or less closely copied, and stray fragments of these are liable to be mistaken for their ancient prototypes. At first Roman art was freely adapted to modern requirements, but this gave place in the eighteenth century to a servile copying of classical models, which resulted in temple-like buildings singularly inappropriate under our grey skies. The proportions of columns and entablatures, however, were less founded upon Greek and Roman examples, than upon the rules laid down by Vitruvius and other writers. Even in ancient Greece and Italy the proportions did not slavishly follow set rules; still less in Roman Britain, where much of the architecture was a crude

edition of the current architecture of Italy. But even in this remote land the designs and technique sometimes vied with the best productions of the nearer provinces to the seat of the empire. While the Roman work in this country appeals to us as the product of a people who better excelled in engineering and constructive skill than in art, it must not be overlooked that the most conspicuous and best-known remains are military, where utility would be the first consideration. The public buildings, temples, and larger houses, where architectural effect might reasonably be looked for, are now little more than crumbling foundations and fallen materials; and these occurred, as a rule, in regions where stone suitable for carving is scarce or unobtainable. There is evidence of the general use of stucco, which has crumbled, and of timber, which has wholly disappeared. But more is known of the interiors; and from the rich mosaic pavements and the fragments of painted mural decorations, which have been abundantly found, it can hardly be thought that their exteriors would lack embellishment. The remains of the forum and basilica at Silchester indicate an *ensemble* of buildings at once spacious and stately; and the houses, however plain their exteriors, must have had a certain picturesqueness arising from their outshoots and corridors, and roof-lines of different heights.

WALLS

The reader will have already observed that the masonry of the era varies considerably, and frequently has little or nothing to distinguish it from that of later times. The Pennant-grit walls of the Roman fort at Gellygaer are precisely similar in their appearance and method of construction to the modern work in the same material in that district; and it would be a difficult task to point out wherein the walls of the Roman houses at Silchester differ from the flint walls of later date. The Roman builders, like the modern, were governed by the material they worked with. Still, their masonry has certain peculiarities which broadly distinguish it. The faces of the stones are often short or squarish, and this is owing to a predilection for 'headers' rather than for 'stretchers.' There is also a marked tendency for the stones to be narrowed off behind, so as to firmly key into

the core. The use of mortar mixed with broken brick in exposed positions or where great strength was required, is also characteristic. In the south-east of the island, where only flints and other small stones were available, the lacing-courses of tiles to secure the thin facings to the core are highly characteristic of Roman work.

The masonry was almost invariably in regular courses. The facing-stones were nearly always squared, if only roughly so; and even in the coarsest work the faces had their irregular projections removed by the hammer. At Gellygaer, the punch was here and there brought into requisition to finish off the work of the hammer. Sometimes, and especially in the north, the faces were wrought in a peculiar manner, the tooling taking the forms of reticulated zigzag and feather-like scorings $\frac{1}{2}$ in. or more apart. In more finished work, as in the jambs of gateways and the like, the stones were carefully dressed with the punch, as in Fig. 72, or the chisel. In Fig. 73, another Corbridge example, the rough-pitched faces have chisel-drafted margins, and the joints closely fit without mortar. This work is confined to masonry of large stones, and other examples may be seen at Housesteads. Random work is rare. An example of this was recently uncovered at Cwmbrwyn,[1] Carmarthenshire, where the stones were used in almost the rough condition in which they were quarried.

In ordinary walling the joints were usually wide, and the mortar coarse and often mixed with small gravel. In spite of the proverbial excellence of Roman mortar, it did not always attain a high standard in Britain. Now and again it was little better than a mixture of earth and lime, and the latter has sometimes been removed by the solvent action of the moisture of the soil, leaving an earthy residue which has misled observers into thinking that puddled earth was used for mortar. In narrow walls, as those of houses, and occasionally in the thick, defensive walls of cities and forts, as at Caerwent, the mortar was wholly trowel-laid; but more often the latter were grouted internally, as already described in the case of Cardiff (p. 52). The pointing at these two places is here and there in a remarkably fresh condition. At Cardiff, it seems to be of the mortar used for bedding the facing stones, which is finer than usual, and

[1] *Arch. Camb.*, 1907, p. 196.

FIGS. 72, 3. WALL OF GRANARY AND 'RUSTICATED' MASONRY WITH MOULDED PLINTH, CORBRIDGE

was probably done as the work proceeded. At Caerwent, a white mortar was used that contrasts in its fineness with the gravelly mortar of the interior. In both, the pointing would be described by a modern mason as 'flush-pointing.' In some work recently exposed at Caerleon, the masonry was dressed and the joints filled with fine mortar, on which sunk bastard joints were ruled with a rounded tool, and then painted red. At Burgh Castle, pink or fine brick mortar was used for the pointing. These brick mortars, whether fine or coarse, have generally stood the test of time well, and they were much used in the construction and lining of hypocausts and baths, and generally where strength and tenacity were required. Clay was frequently used instead of mortar in foundations and revetments, in furnaces and hypocausts, where the heat soon gave it a bricklike consistency, and to render tanks watertight. It is probable that the fine, hard, white cements for lining the floors and walls of rooms were mixed with the whites of eggs or saccharine fluids.

Walls built of, or faced entirely with, bricks were frequent in Rome at a late period, but were exceptional in this country, the use of bricks, or, as they are usually called, tiles, being generally confined to the construction of hypocausts and furnaces, and to form lacing-courses. Arches were frequently turned in them, and sometimes they served as quoins in flint and other walls constructed of small stones.

Roman bricks are almost invariably of red clay. The kneaded clay appears to have been first rolled out on sand to the desired thickness, and then cut into suitable sizes to be transferred into shallow frames or moulds, in which they were pressed out. When removed, the soft pieces were finally scraped or trimmed with knives. Four sizes are commonly met with in this country, three of them square, approximately $7\frac{3}{4}$ by $7\frac{3}{4}$ ins., 11 by 11 ins., and $16\frac{1}{4}$ by $16\frac{1}{4}$ ins., and an oblong, approximately $16\frac{1}{4}$ by 11 ins.; and less frequently a larger square, about 23 by 23 ins. These are the average dimensions: actual specimens may vary from $\frac{1}{2}$ to $\frac{3}{4}$ in. in the smaller, and 1 in. or more in the larger sizes. The differences are probably due to unequal shrinkage in the manufacture, some clays shrinking more than others, and even the same clay, according to its moistness or the degree of heat it is exposed to. The smallest size mentioned above was made specially for the *pilae*, and the largest for the roofs of the hypo-

causts. The two medium square sizes were evidently intended for a Roman foot and foot-and-a-half respectively, and so correspond with the *tegulae pedales* and *tegulae sesquipedales* of ancient writers. The oblong bricks could be used with either of these according to the way they were placed, and probably were made for effecting a bond with them. Intermediate sizes of rectangular bricks are decidedly rare. Half-round bricks are occasionally met with, and were probably used, as in Pompeii, in the construction of pillars. Roman bricks rarely exceed the limits of 1½ and 2 in. in thickness.

Few Roman arches, even in an imperfect condition, remain in this country. They appear to have been almost invariably semicircular and of a single ring of voussoirs; but flat arches are known to have existed. Shaped voussoirs were used in the large arches of the gates of forts and cities. At Gellygaer and Merthyr Tydfil they were of a local calcareous tufa, which was selected on account of the ease with which it could be sawn. Brick voussoirs were common. A large fallen piece of a brick arch, which crowned a lunate window at the west end of the great bath at Bath, is to be seen there. Small arches, however, were often constructed of ordinary bricks or of thin flat stones, in which case the joints were necessarily wedge-shaped, and the stability of the structure depended upon the strength and cohesiveness of the mortar. For vaultings, where lightness was a first consideration, hollow brick voussoirs were used. Those of the main vault of the great bath just referred to, were 1 ft. long by 4 ins. in depth, and tapered on their faces from about 6½ to 7½ ins. They were scored with a comb-like instrument or 'scratch,' in order to make the mortar adhere to them. The upper surface of the vault was covered with a thick layer of coarse mortar, into which had been pressed half-round roofing-tiles (*imbrices*) arranged longitudinally so as to lace together the successive zones of voussoirs.[1] The under surface of the vault

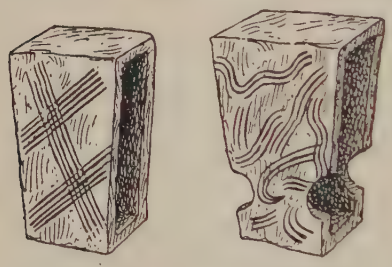


FIG. 74.—Tile Voussoirs, Bath. (⅛.)

[1] Personal observation. See also *Archaeologia*, lx, p. 443.

was lined with fine white mortar, which may have been ornamented, as in Pompeian examples, with raised mouldings and arabesques. In Fig. 74 are shown two hollow voussoirs from Bath, the second being remarkable for the puzzling semicircular notches near its base.

That timber was extensively used in the construction of houses can hardly be questioned, but direct evidence is scanty. Again and again at Silchester and elsewhere, undisturbed floors of small buildings have been found without a trace of the walls that enclosed them, and the presumption is that these were of timber. Internal timber partitions are indicated by the chases in the floors for their sleepers, or plinths.[1] Rows of post-holes marked the sites of timber buildings within the fort at Ardoch (p. 30). Evidence of a positive nature was supplied by the remains of a house discovered at Bucklersbury, London, in 1869.[2] Here all the walls, with the exception of the apse of a large room, had been of timber-work, and fragments of the oak sleepers remained *in situ*.

Almost invariably, however, the houses—especially the larger ones—had stone foundations for both external and internal walls; but this is no proof that their superstructures were of masonry. Our existing old timbered houses have masonry plinths or basements, and there is good reason to think that this was customary in Roman times. The sites of the Roman houses are not as a rule so encumbered with fallen building stones as might have been expected had their walls been wholly of masonry; and now and again the foundations are too narrow and slight to have borne such weighty structures. Mr. St. John Hope, in describing a house uncovered at Silchester in 1901, sums up his experience as follows: "For my own part, I have long been convinced that a large number of the buildings at Silchester were of half-timber construction, and that only in the case of rooms warmed by hypocausts, which are usually placed at the ends or sides of the houses, were the walls carried up to their full height in masonry to avoid risk of fire from the flues built into them. This is also borne out by the greater thickness of the walls of these winter rooms." [3]

[1] *Archaeologia*, lvi, p. 243; lvii, p. 234. *Arch. Cantiana*, xxii, p. 49.
[2] Price, *Bucklersbury*, p. 44. See also *Archaeologia*, lx, p. 438.
[3] *Archaeologia*, lviii, p. 24.

This house (I, XXVII) furnished some interesting evidence as to the construction of the Silchester houses. It, or a portion of it, had been destroyed by fire, and amongst the burnt débris were pieces of clay parget, baked into brick. On the front had been impressed a herringbone pattern from a wooden stamp; and on the back were the marks of wattlework. The inference is clear enough. Some portion of the house—probably the upper storey—had been of timber framework, with the panels filled in with wattle and daubed over with clay—a method of construction which was common enough up to two centuries ago, and which is still to be seen in old cottages, although the

FIG. 75.—Roman Carpenters' Nails. (⅛.)

'wattle-and-daub' has usually been replaced by brickwork. That this was not exceptional at Silchester is proved by the frequent presence of a layer of pasty clay overlying the floors of the houses, which had long puzzled the explorers. The impress of wattles or laths has been noticed on pieces of the internal wall plaster of Roman houses, notably at Caerwent.[1]

Nails are among the most frequent 'finds' on Roman sites, but, as might be expected, they are, as a rule, reduced to shapeless masses of rust. In Fig. 75 is shown the prevailing forms. They appear to have always been square in section, and by far the commonest forms had tabular heads, square or circular, as

[1] *Archaeologia*, lx, p. 453.

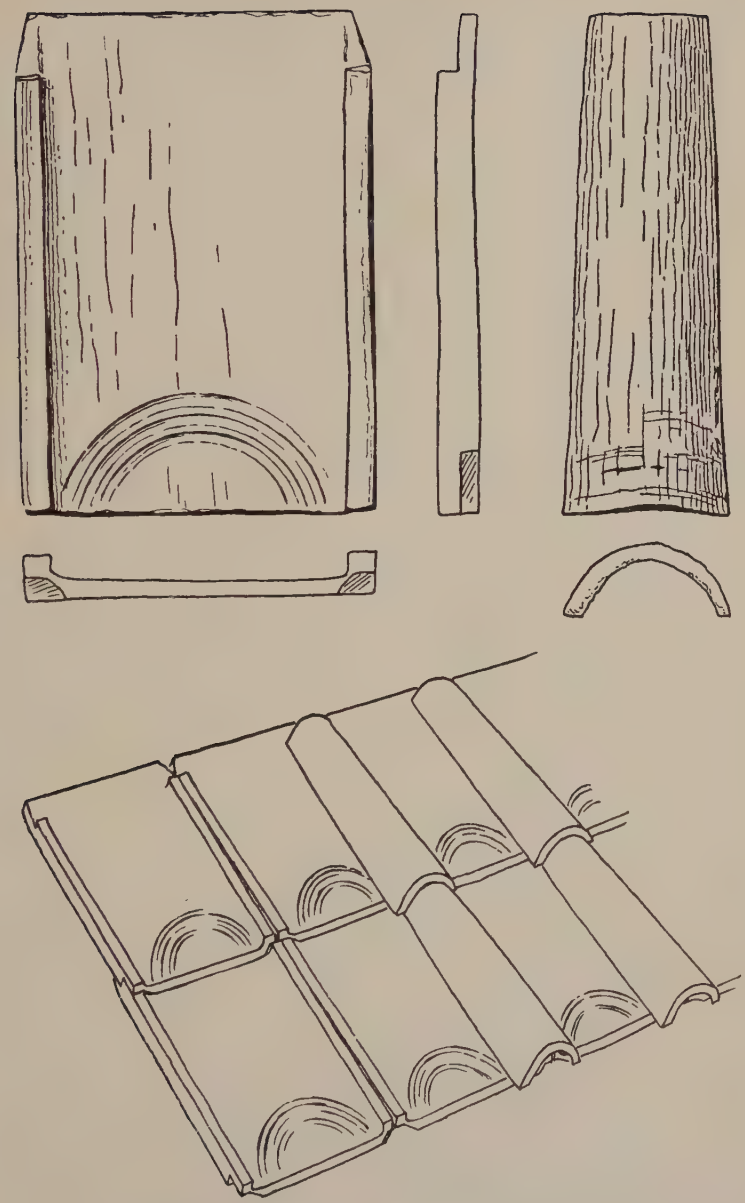


FIG. 76.—Roofing-Tiles: Tegula and Imbrex ($\frac{1}{8}$) and their combination on a roof.

the first four in the illustration. That in the middle resembles a modern ' clasp ' nail, and the remaining ones, except the small one with a hemispherical head, are variants of it. As a whole, they resemble the old-fashioned hand-made nails, before the introduction of machine-made ones.

ROOFS

On the sites of most Roman buildings are found roofing-tiles and flags, showing that roofs so covered were common in Roman Britain. The tiles were of red clay, and of a form which still prevails in Italy and elsewhere in southern Europe. They were

FIG. 77.—Antefixes, Chester and London. (¼.)

in two series, which were as necessary to one another as the warp and woof of a woven fabric—flat *tegulae* with upturned edges and half-round *imbrices*, A and B, Fig. 76. The *tegulae* were roughly 1 ft. 10 ins. long and 1 ft. 4 ins. wide ; but these dimensions varied, owing probably more to shrinkage in the process of manufacture than to intentional differences. They were usually about 1 in. thick, and the flanges were as wide and high. The flanges of each tile stopped short of the upper end by about 2½ ins., and the lower angles were usually notched out on the under side to receive the upper ends of the flanges of the tile below in the row, in order that the tiles should be well locked together and have the necessary overlap. To facilitate this still further, the tiles were sometimes slightly wedge-shaped, the lower ends being narrower than the upper. The *imbrices* were

about as long as the *tegulae*, and they were tapered, so that the wider lower end of each enclosed the narrower upper end of its fellow below. These covered the flanges of the flat tiles and were secured by mortar, the roof thus presenting a series of bold rolls with intervening flat channels, as shown in Fig. 76. As these tiles were not provided with nail-holes, they were only suitable for roofs of low pitch where they could remain in position by their own dead weight, and with little doubt the roofs were strongly planked, not lathed, to receive them.

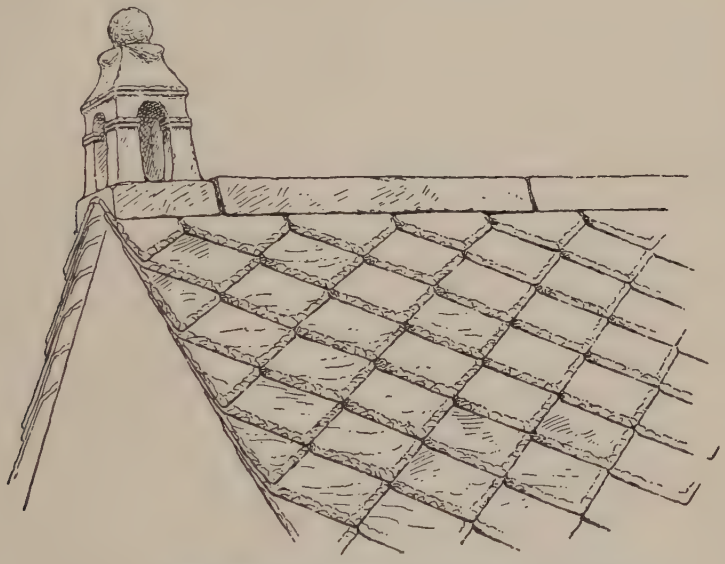


FIG. 78.—Stone Roof with Cresting and Finial, Llantwit Major.

The roofing-tiles, like the bricks, were made by hand, aided perhaps by frames or moulds to give them their requisite general form, and the *imbrices* were probably curved over shaped wooden blocks. By way of decorative effect, concentric groovings were often produced on the lower portions of the *tegulae* by a rapid semicircular sweep of a tool, or possibly of the fingers.

Antefixes for ornamenting the eaves of these roofs (Fig. 77) were only sparingly used in this country. Examples have been found at Chester, Caerleon and a few other places. The tongues

behind were pushed into the ends of the lowest *imbrices* and secured by mortar.

The slabs or 'slates' of the stone roofs were of a peculiar and characteristic form. The sides were parallel, or slightly converged upwards, and instead of being square at the foot, as is usual at present, they were pointed. The upper ends, when shaped at all, were roughly pointed, thus giving the whole slab an elongated hexagonal form. The usual width was about 11 ins., and length from 16 to 18 ins. or more. These slabs were invariably held by nails, and as the distance of the nail-hole from the point varies considerably even in the slabs on the same site, it is almost certain that they were fastened to boarded roofs. In combination they gave rise to a lozengy pattern, as shown in Fig. 78. Those used at the eaves were square at the base, and those next the ridge were of the ordinary form but shorter and with flat heads. The material of the slabs depended, of course, upon what was available, as the fissile limestone known as Stonefield slates in the south-west of the island, and Pennant flags in Monmouthshire and South Wales, while true slates were used in Cumberland, and at Cwmbrwyn in Carmarthenshire, an ashy slate from the Precelly Hills.

The ridges of the tiled roofs were probably crested with ridge-tiles resembling the *imbrices*, if not with *imbrices* themselves. But many examples of the stone crestings of the stone and slate roofs have been found. On the site of a house at Llantwit Major in Glamorgan,[1] the Pennant slates of the roof lay as they fell, and with them lengths of the Bath stone cresting. These had flat tops, 6 ins. wide, and sloping sides of about 4 ins., while the under sides were roughly channelled to receive the ridge, and retained traces of mortar. With them lay a gable-finial of Bath stone, the base of which was similarly channelled below and formed the terminal of the ridge-cresting. Its oblong body was perforated with two intersecting arched openings, thus leaving four square piers, each with a simple cap, and the summit feature was a foliated knob. Similar finials have been found at Bath and elsewhere in the west of England. The Llantwit Major roof, with its lozenge-shaped slabs, bold cresting, and graceful finials, must have had a pretty appearance, and might well be copied in modern work.

[1] Cardiff Naturalists' Society *Trans.* x, p. 49.

Roof-coverings of less durable materials were certainly frequent in Roman Britain, as it is not unusual to find neither tiles nor slates on the sites of buildings. At Gellygaer, for instance, the barracks and other long buildings contrasted with the central buildings in the absence of roofing-tiles on their sites, the inference being that they were covered with wood or thatch.

FLOORS

Timber must have been exceptional in Roman Britain for ground floors, for their sites nearly always yield traces of flooring materials of a more enduring nature. The absence of these traces is, of course, no proof for timber; but occasionally the soil on the site is not only devoid of them, but is in a soft and natural condition, while the contiguous rooms have mortar or mosaic pavements, and in such a case it is reasonable to infer a timber floor. But there is evidence of a more direct nature. At Silchester, a patch of gravel in Insula XVI had a series of parallel trenches about 6 ins. wide and 18 ins. apart, and filled with dark mould, implying a series of joists which had decayed.[1] And in several instances the walls of houses and other buildings there exhibited on their inner sides flat off-sets apparently for beams to carry floor-joists. Upper floors can hardly have been otherwise than of timber, and apparently wholly so, for nothing has been recorded that could be construed as fallen mosaic or plaster from floors above.

Floors of beaten earth, gravel, or clay were mostly confined to outbuildings and cottages, or to rooms of little importance.

Mortar and concrete floors were very frequent, and are found on the sites of most houses for kitchens and other rooms used for menial purposes, and sometimes even for the best rooms. They varied in construction and finish, from a mere spread of coarse mortar or concrete upon the natural soil or upon a bed of broken stone, to a layer of fine mortar with a surfacing of fine lime-cement, resting on a foundation of concrete. These fine white floors must have vied with the mosaic pavements in beauty. One found in House I, VIII, Silchester, had a fine brick concrete basis, finished off with a coat of white-lime cement, which when

[1] *Archaeologia*, lv, p. 420.

polished must have had an ivory-like surface, contrasting with the gay colouring of the walls.[1] The quarter-round skirting of this room was in a fine pink cement. Floors of this class are rarely perfect, and it is likely that many which have been described as of indurated gravel, rammed chalk, or loamy sand may have originally been of concrete or mortar that has partially or completely lost its limy constituent.

Opus signinum floors properly come under this head, but the term is often applied to the brick concretes which the Romans used for a variety of purposes besides floors, and more often as the basis for cement or mosaic than as the actual floor-surface. The term should be confined to the more carefully made concretes of this sort which were ground and polished, giving rise to an artificial polished breccia. In order to give an enriched effect to these floors, chippings of marble and other fine stones were occasionally introduced, as in the floor of one of the temples at Silchester.[2]

Flagged paving and pitching were chiefly used for stables and outbuildings, and especially for yards and other spaces open to the sky. The *schola* of the great bath of Bath was paved with huge slabs of freestone, well squared, but of different sizes, yet well fitted together ; but probably this was the foundation for a mosaic floor. At a later date, however, the bathers walked upon a similar pavement of smaller slabs at a higher level. The yards of the headquarters and of the baths at Chesters were similarly paved with large squared slabs ; but more often these pavements were of less careful construction, consisting of blocks of all shapes and sizes as quarried or collected from the surface, and fitted together as best they might be. In chalk regions flints were much used for the purpose. Tile pavements are occasionally met with. In several found at Silchester the tiles were carefully laid in brick mortar. The design of one of these pavements (House 1, XXIII),[3] as originally intended, consisted of a border of two rows of tiles, 8½ ins. square, the enclosed space having octagonal tiles of the same size with small square ones to fill the interspaces. The builder, however, seems to have run short of these tiles, and so completed his work with hexagonal tiles of smaller size, filling the interspaces with rough mosaic. Such

[1] *Archaeologia*, liv, p. 217.
[2] *Ib.* lii, p. 744.
[3] *Ib.* lvii, p. 230; also liv, p. 219.

pavements may be regarded as rude imitations of *opus sectile*, which consisted of pieces of marble or tile cut into various shapes to make up geometrical patterns.

But the pavements which are best known and most appreciated are those of mosaic. As might be expected, in a remote province they are not of the costly materials and fineness of those of Italy, yet some approach them in these respects. The advantage of mosaic lies in the facility with which small cubes of coloured materials can be worked into patterns of varied and gradated colours. The cubes ranged from ½ in. to 1½ ins., rarely more or less, and in a general way two sizes prevailed, a smaller, from ½ to ¾ in., and a larger, from 1¼ to 1½ ins.; and according to the size used, we may conveniently divide mosaic-work into 'fine' and 'coarse.' The former was used in decorated work; the latter chiefly in the plain or only slightly decorated work of corridors and less important rooms. The faces of the *tesserae* in the finer work were roughly square; but in the coarser they were more often somewhat oblong. The materials of the *tesserae* were, as a rule, tile and stone; but in the finest decorative details coloured glass was occasionally used. In a country of such diversified geological structure as ours, it was rarely necessary to go far afield for suitable natural materials. Sandstones provided buff, grey, dull red, and even purple *tesserae*; limestones and marbles, an even wider range of colours from white to almost black; certain ironstones, chocolate and black; and hard varieties of chalk, white. Some of the sandstones appear to have had their colours modified by heat. Tiles, of course, provided various shades of red, from salmon to purple brown.

In plain mosaics the *tesserae* were laid in rows running parallel to the sides of the room. As they varied in length, the rows necessarily 'broke joint' like the course of a wall. In decorated work the rows followed the lines of the pattern. The fan-shaped arrangement in modern work is never seen in the Roman.

The *tesserae* were bedded in fine white or pink cement of great hardness, and the greatest care was exercised to obtain a good and level foundation. In the Basilica of Viroconium[1] the white setting rested upon 2½ ins. of fine brick concrete, which was spread over a foundation of broken stones levelled up with mortar

[1] *Uriconium*, p. 200.

2 ft. thick. One of the mosaic floors of House 1, XIV, Silchester,[1] had the following in descending order: red cement, 1½ ins., upon which the *tesserae*, bedded in pink cement, were laid; white concrete, 3 ins.; and yellow mortar, 8 ins. Another in the same house had its *tesserae* similarly laid in pink cement, and resting on the following understructure: drab cement and mortar, 3½ ins.; white cement and pebbles, 3 ins.; gravel, 5 ins.; and mortar, 1 in.

There is little doubt that the plain mosaics were laid by the direct process, that is, the cubes were placed directly on the prepared floor-surface; but whether this was the process adopted in the decorated ones is less certain. The usual method at present is first to cut a number of pieces of stout paper which fit together to correspond with the intended mosaic, and on these the pattern is traced. The cubes are then glued or pasted upside down on them, and when dry are ready to be transferred to the freshly cemented surface. The sections are applied with the cubes downwards, and, after being well pressed into the soft cement, the paper is moistened and stripped off, the final fixing process being to press into the joints a fine hard cement. It is probable that the Roman mosaists adopted this or some similar method for their more elaborate work.

DOORS AND WINDOWS

As the walls of houses and similar buildings are almost invariably reduced to their lowest courses or to foundations only, the discovery of a complete doorway is of rare occurrence. A good example was found at Great Witcombe in Gloucestershire[2] early in the last century. Its height was 6 ft. 2 ins., and width about 3 ft., and the casing was of stone, the sill, lintel, and jambs being of a single piece each. More often the casings were of wood, and, needless to say, these have perished. Of the actual doors perhaps the only one which survived to modern times was that of the treasure-vault at Chesters. It was of oak, bound and studded with iron, but it fell to pieces soon after its discovery. It was of strong construction, and of a kind only likely to be used in houses for the external doors.

[1] *Archaeologia*, lv, p. 227. [2] *Ib.* xix, p. 178.

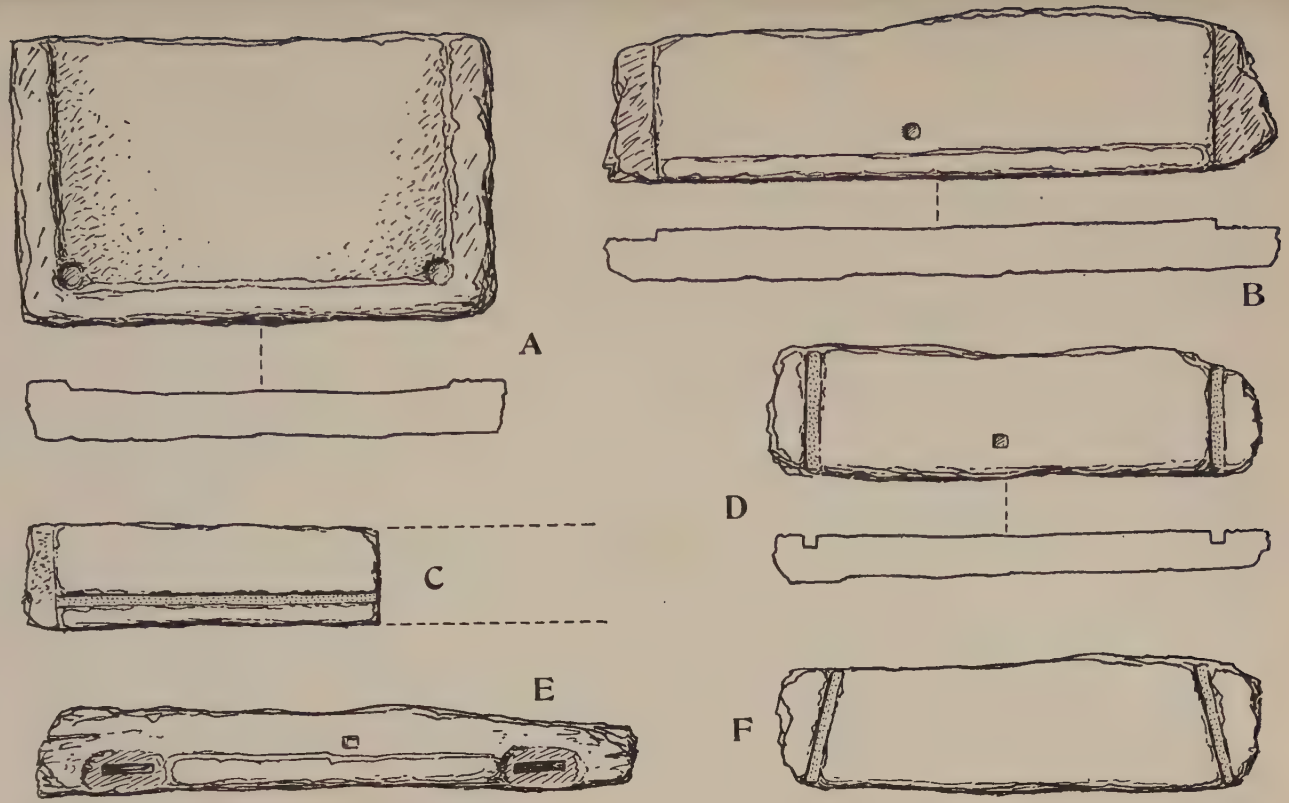


FIG. 79.—Stone Door-Sills or Thresholds, Caerwent. (2 ft. to 1 in.)

The house doors compared favourably with ours, a width of from 4 to 6 ft. or even more being very frequent in Silchester; but as the casings there were almost invariably of wood and have disappeared, some reduction has to be made before these measurements represent the widths of the original openings. The exact sizes of the wooden thresholds are often determinable from the hollows which they occupied, and a thickness of 3 ins. and breadth of 18 ins. is not unusual in internal doors. At Caerwent, many of the sills were of stone and remain intact, and from them much can be gleaned of the construction of the casings. In Fig. 79 are shown several of these stone door-sills. In A, the surface generally has been hewn down so as to leave a rim along the front to serve as a sheath or stop for the door, and raised strips at the ends to carry the jamb-pieces, which were undoubtedly of stone. The two pivot-holes show that the door was of two leaves. In

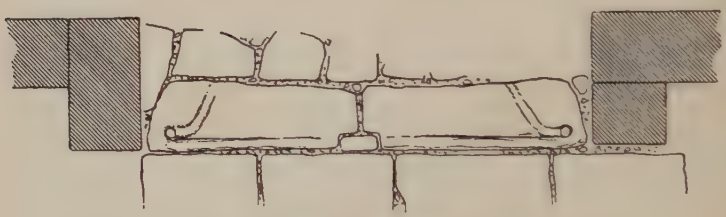


FIG. 80.—Stone Threshold, Housesteads. (5 ft. to 1 in.)

the remaining examples there are no pivot-holes, the doors having been hinged. Hinges such as we use for doors are seldom found on Roman sites, but 'hook-and-eye' hinges, similar to those now used for field gates and outhouse doors, are frequent. The sills, B and C, have their ends rebated to receive the ends of the jambs. The former has a raised rim, but the latter a groove instead, to receive a wooden sheath about 2 ins. thick. E is unusual in having longitudinal sockets to receive the tongues of the jambs, which in this case must have been of wood, and at least 7 ins. across the face. D and F represent another type, having transverse grooves near the ends to receive the ends of plank jambs, and in the second of these the jambs were splayed. In three of these Caerwent sills there is a bolt-hole a trifle to the left of the centre, showing that, as in the first example, the doors were of two leaves, and this appears to have been a general custom.

Of the windows we know less than of the doors. Three imperfect examples, two of them small, were noticed on pages 205, 211–2, and it will be observed that they occurred in baths. Not a single example of a domestic window is left to us; and this is noteworthy, for the walls of houses have occasionally been found high enough to show the window-sills, had these been as near the floor as in modern houses. The lowness, as also the large size, of the modern windows is the result of cheap, clear and colourless glass; they are now as much to see through as to admit light. But as recently as a century ago, they were habitually placed higher than at present, and were small; and the medieval windows were still higher and smaller, glass being not only costly but irregular and somewhat obscure. Nothing was to be gained by having their sills low; on the contrary, high windows were better calculated to give an evenly diffused light, and their sole function was to admit light. In the Pompeian houses the windows were, as a rule, few, small, and placed high; but before the destruction, larger and lower windows had come into vogue.

The window-glass found on our Roman sites is rarely less than $\frac{1}{8}$ in. in thickness and of a greenish-blue tinge. That it was cast in rectangular slabs is proved by the rounded edges often seen on the fragments. The face produced by contact with the bed on which the molten 'metal' was poured, is flat and dull, while the other face is wavy and bright; and the former face was probably rendered more obscure by scouring with sand. These slabs were cast in the requisite sizes for use.[1] Another variety of window-glass is thinner, equally bright on both faces, and somewhat streaky, and it resembles the glass still to be seen in old cottage windows. There is some evidence that it was later than the cast glass.

It is supposed that iron cross-shaped objects, which have been found at Silchester, Caerwent and elsewhere, were used for fastening glass in windows. They are perforated in the centre and are from 7 to 8 ins. across. They were probably fixed at the intersections of the bars by nails, rivets or screws, as indicated

[1] A large stone with a shallow recess, 12 by 8 ins., on one surface, found at Wilderspool, is regarded by Mr. Thomas May as a mould for window-glass. He found in the vicinity remains of Roman glass-works. *Warrington's Roman Remains*, p. 82.

in Fig. 81, the arms being diagonal *Zy*, and placed so as to clip the corners of the panes.

HEATING OF ROOMS

There were three methods of heating rooms in Roman-Britain —by hypocausts, by fireplaces, and by braziers. The last was the most ancient method, and was in common use in Pompeii for heating the living-rooms of houses, the hypocaust being confined to baths. But in Britain, the colder climate brought into general requisition the hypocaust, and thus limited the use

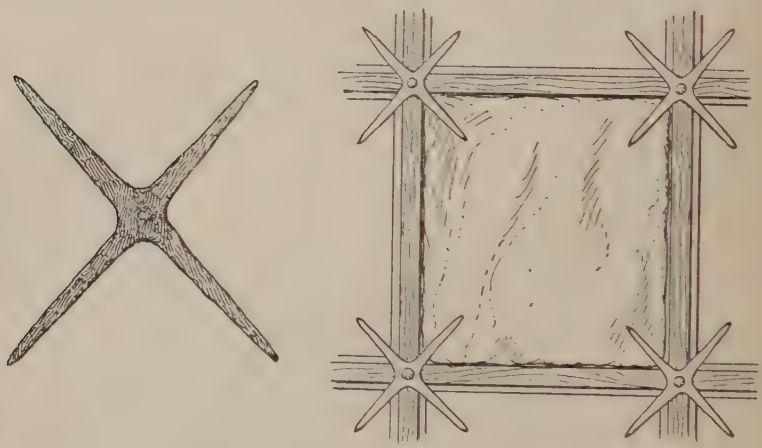


Fig. 81.—Cruciform Iron Object (¼), and its probable use for holding window-glass in its frame.

of the brazier. Internal fireplaces, which may be regarded as fixed braziers, appear to have been exceptional.

The principle of the hypocaust is so well known, and has been so frequently referred to in these pages, that it is almost superfluous to say that it consisted in the utilization of the hot gaseous products of an external fire by conveying them through flues or other spaces under the room or rooms to be warmed. This implies some means of drawing these gases through these spaces. This could have been effected by a vertical chimney at the end of the hypocaust furthest from the fire, but the Romans improved upon this by having a number of small chimneys or flues dis-

tributed along the walls of the apartments, so that not only the floors, but the walls, radiated heat. It is evident that by this means a large percentage of the heat of the fire was utilized, contrasting in this respect with our open English grates, from which a large proportion escapes by the chimneys. The English system, however, ensures ventilation, which the Roman did not; but as the Roman rooms were large and probably lofty, this defect may not have been seriously felt; besides, there may have been means of ventilation we know nothing of. The cheerful glow of the English fire was also lacking, but in compensation there were the gay colouring of floors and walls and an equable temperature. Compared with our stoves and hot-water and low-pressure steam pipes, the hypocaust had a decided advantage, as the gentle heat of floors and walls could not have communicated to the air the scorched odour so often experienced in rooms heated by these means. The chief defect of the system was the absence of means of regulating the heat, except by raising or lowering the fire of the furnace; and from the great and necessary thickness of the floors and the low conductivity of their material the effect of this could only have been felt after many hours.

In its simplest form the hypocaust was a drain-like horizontal flue under the floor of the room or set of rooms to be warmed, the mouth of which was in one of the external walls, and formed the stoke-hole or furnace, and the opposite end branched and terminated in several wall-flues. Simple hypocausts of this kind were constructed in even the largest houses; but more frequently the distribution of the heat was improved by a regular system of branch-flues. One common device was to carry the main flue to the centre of the apartment, from which point branches radiated, Union-Jack fashion, to the corners and sides of the room, and communicated directly, or indirectly through the intervention of a surrounding flue, with the wall-flues.

Another form, which is perhaps more frequent, was a shallow basement the size of the room, varying from 2 ft. to 2 ft. 6 ins. or more in height, into which the furnace opened, and from the sides of which the wall-flues arose, the floor of the apartment being supported upon a multitude of pillars (*pilae*). The advantage of this form was that it allowed of a more equable diffusion of heat, by exposing a maximum and evenly distributed area of the under surface of the floor to the heat; hence it was used for

rooms which required a considerable degree of heat, and especially bathrooms. Although less simple and demanding greater

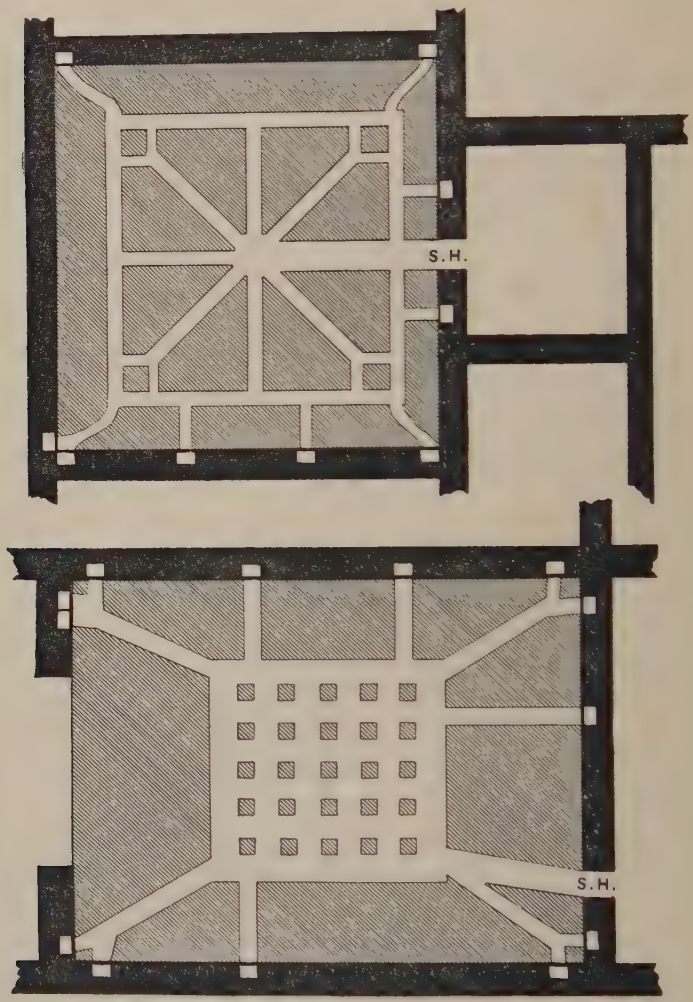


FIG. 82.—Plans of Channelled and Composite Hypocausts at Silchester. (10 ft. to 1 in.)

constructive skill, it was the earliest form of hypocaust, and is the one described by Vitruvius and other classical writers.

We have thus two types of hypocausts in Britain—the

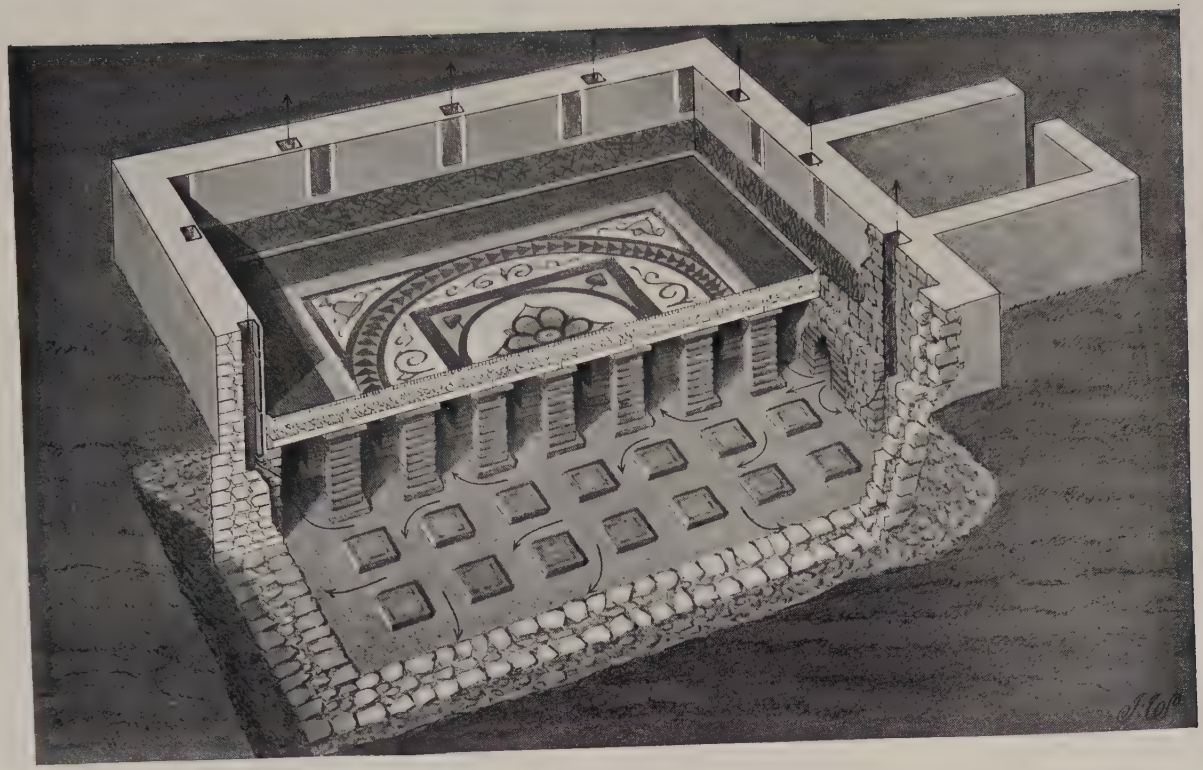


FIG. 83. DIAGRAMMATIC VIEW OF A ROOM WITH HALF ITS FLOOR REMOVED TO SHOW THE HYPOCAUST. ON THE RIGHT IS THE FURNACE HOUSE

'channelled' and the 'pillared.' The two types may be combined, thus giving rise to the 'composite' hypocaust, the main flue of which opened into a small pillared space, from which other flues radiated to the walls of the apartment. In Fig. 82 are shown the plans of a radiating channelled hypocaust and a composite one, both Silchester examples; while in Fig. 83 is presented both a view and a section of the lower part of a room with a pillared hypocaust below. The furnace or stoke-hole is seen on the right, and the furnace-house beyond, which would be descended by steps.[1] In the opposite or left wall of the room is shown a wall-flue in section.

The flues of the channelled hypocausts were usually from 1 ft. to 1 ft. 6 ins. wide and as high or higher, with sides built of rough masonry set in mortar or clay, and spanned above with flagstones or large tiles, upon which the concrete of the floor was laid. The floors of the flues appear to have been, as a rule, the natural soil hardened by beating. In the pillared hypocausts they were usually of concrete, so as to provide a firm foundation for the *pilae*. These pillars were constructed of tiles, blocks of stone, and, very rarely, of long box-flues set on end. In districts where suitable stone was not obtainable, as at Silchester, tiles were used, and even where such stone was plentiful, there was a decided preference for these, as they withstood the heat better than stone. The tiles were generally about 7 ins. square, laid in mortar or clay, and the stack rested upon and was capped with a single one of larger size. In a few instances octagonal tiles were used, as in a Silchester example; and it is not unlikely that the *pilae* were sometimes cylindrical, as round and half-round tiles have been found on Roman sites. When stone was used, the support usually consisted of a single block roughly squared; but sometimes they were more carefully wrought with a projecting plinth and cap. As these hypocausts were roofed with flagstones or large tiles, the pillars were necessarily near one another, being rarely more than 18 ins. apart.

The furnaces were often constructed of tiles, but if of stone, the sides and top were coated with brick-mortar to protect them from the action of fire; and for the same reason the sides of stone flues and *pilae*, where exposed to great heat, were similarly treated. The furnaces of baths projected several feet in order

[1] For example, at Silchester, *Archaeologia*, lx, p. 435.

to provide supports for the tanks or boilers which supplied hot water for bathing purposes.

The wall-flues were constructed of special tiles for the purpose, and these were of two forms, the one like a box open at the ends, and the other like a roofing-tile with the flanges more produced (Figs. 84 and 85). The 'box' tiles were generally oblong in section and about 1 in. in thickness, but varying in dimensions; a length, however, of from 1 ft. to 16 or 17 ins., and a width of from 6 to 8 ins. across the face, and of $4\frac{1}{2}$ or 5 ins. across the sides, were usual. The faces were almost invariably scored with a point or a 'scratch,' so that the mortar which held them to the wall and the stucco-facing of the apartment might firmly adhere. The scoring took the form of some simple pattern such as the whims of the makers suggested. Very rarely the necessary unevenness was produced by a stamped device of an ornamental character. A flue-tile thus ornamented with an elaborate floral design may be seen in the Guildhall Museum. These tiles were moulded by hand round blocks of wood, which, upon completion, were withdrawn; less frequently, in reverse manner, within wooden moulds.

The wall-flues were, as already stated, usually placed at intervals along the sides of the apartments, in which case they were let into grooves and were completely hidden by the stucco. When it was necessary to *line* a wall with flues, as in the hottest rooms of baths, they were simply built against the wall, to which they adhered by mortar; but often the precaution was taken further to secure them by T-shaped holdfasts. In such a jacketing it was usual for the tiles to have lateral openings, oblong or circular, in order that the hot air might freely pass from flue to flue, and so materially help to equalize the temperature. In Fig. 84 are shown six examples of box-tiles. The fourth was at the bottom of a stack, and has the lower portion of its front chipped out into an arched form, so as to enlarge its opening into the hypocaust. The third is a socketed variety from Gellygaer, and is perhaps unique. The flanged flue-tiles were placed with their edges next the wall, and when combined to form a jacketing were probably always held in position with holdfasts. The lateral openings were provided by cutting or scalloping out portions of the flanges, as shown in Fig. 85, where also are shown two holdfasts.

Internal fireplaces may have been more numerous than is supposed. Several have been found at Silchester, notably in House 2, XIV, one of which had a tiled hearth about 2 ft. square,

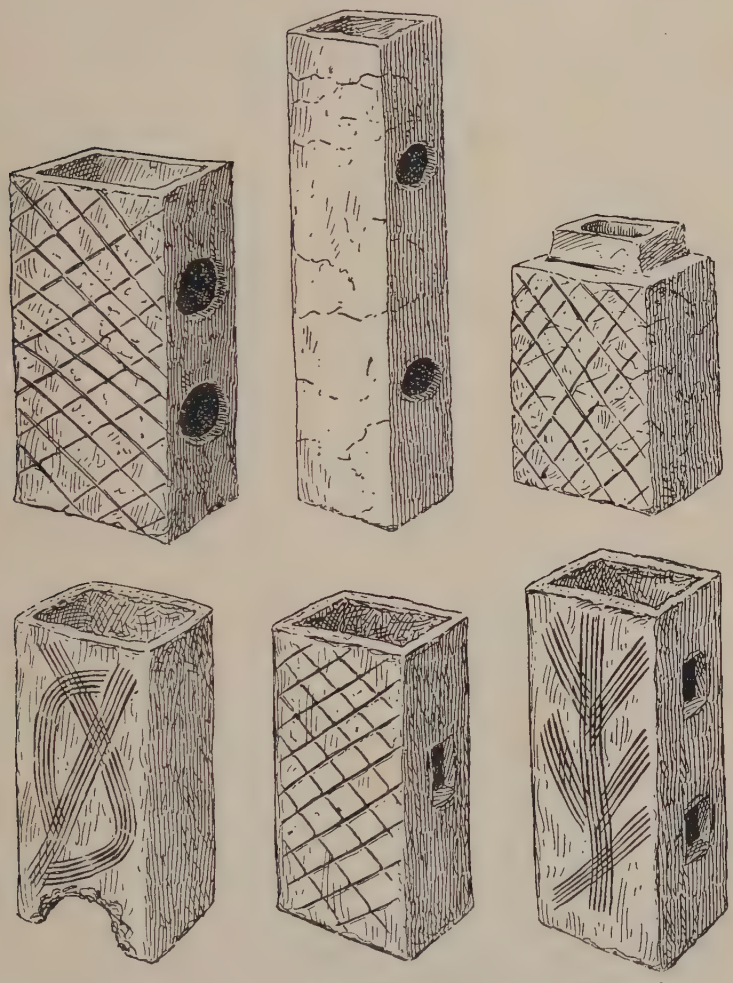


Fig. 84.—Examples of Box Flue-Tiles. The third is a rare form from Gellygaer. (All $\frac{1}{8}$.)

with cheeks and apparently a back recessed in the wall, formed of upright tiles. Others have been found at Bignor, Colerne, and elsewhere. Nothing is known of the chimneys of these

fireplaces.[1] Central hearths were not uncommon, and examples in the headquarters of the forts were noticed in Chapter IV.

To what extent braziers were used in Roman Britain is uncertain. The writer cannot recall having seen in any collection of our Roman remains a brazier, or anything that can reasonably be construed as one, and if, as is probable, they were made of sheet-iron, their disappearance can be accounted for. But there is indirect evidence for their use. It is noticeable that in the remains of the houses of the period hypocausts are confined to very few rooms—apart from bathrooms—and occasionally are quite absent ; also, that in many instances they did not form

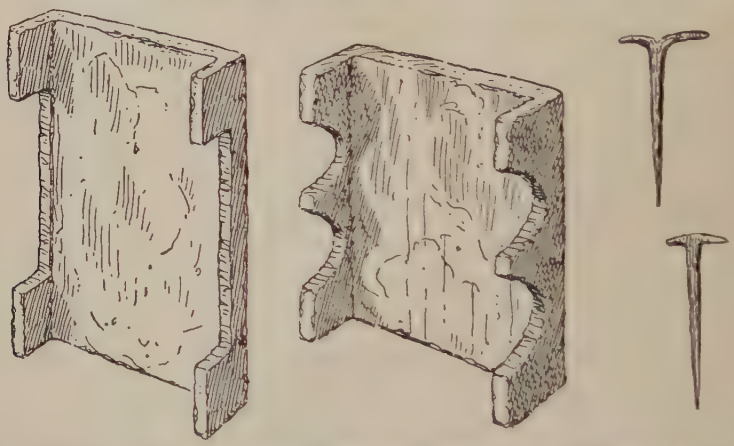


Fig. 85.—Flue-Tiles, Llantwit Major and Caerwent. Also T-headed nails for securing flue-tiles to walls. (All ⅛.)

part of the original structures. As fireplaces are of rare occurrence, the conclusion seems to be that braziers were much relied upon for heating purposes. More definite is the evidence of burnt patches on the floors of rooms. In the centre of a mosaic pavement in House 1, XIV, at Silchester,[2] was observed such a discoloured patch, the central portion of which, nearly circular and about 18 ins. in diameter, had been carelessly relaid with new *tesserae*. A portion of a pavement from Caerwent, now in the Welsh Museum, shows a similar relaid patch with indications

[1] *Archaeologia*, xviii, p. 213 ; lv, p. 240 ; lviii, pp. 20, 26, 417 ; *Arch. Jour.* xiii, p. 328.

[2] *Archaeologia*, lv, p. 226.

of the effect of fire around it. It is a reasonable inference that braziers were habitually placed upon these spots. Cognate with these, are the central hearths observed in some of the headquarters' rooms of the forts (p. 84); in these cases we may reasonably infer that charcoal fires were directly raised upon them.

WATER-SUPPLY

The great aqueducts that supplied Rome, Nîmes and many other continental Roman towns with an abundance of pure water, were among the most remarkable feats of ancient engineering; but there are no remains of the kind in this country that will bear comparison with them. There is evidence that some of the northern forts were supplied with water conveyed from a distance, as noticed on pp. 106–7. Too little is known of our Roman towns, with the exceptions of Silchester and Caerwent, to throw any light upon their water-supplies. At Silchester, underground pipes have been found, but only sparingly so, and there is no evidence that they distributed water from a source outside the walls. On the other hand, wells are so numerous that there is little doubt that the Callevans relied upon them almost entirely for water. At Caerwent, pipes are more numerous, and wells less so, than at Silchester, rendering it probable that some of the supply was external. Wells have been frequently found within or in the near vicinity of the rural houses; and there is evidence that these houses were occasionally supplied from springs by pipes or conduits.

Many of the Roman wells were steined or lined with stone. Some of the Caerwent wells were thus lined from top to bottom; others only part way down, the gravelly clay below being sufficiently hard to require no support. At Silchester the normal soil is lighter, and while it was occasionally solid enough to require no support, there was generally a lining of flints. Almost invariably, however, the well-sinkers encountered a seam of variable thickness of wet sand which had little cohesiveness. To retain this in place, they usually resorted to timber framing, which consisted of planks of scrub oak or alder about 3 ft. long, laid in courses of four arranged rectangularly and crossing at the angles as in an 'Oxford' frame. At the points

—*fresco buono* and *fresco secco*. In both, the colouring matter is mixed with water or some watery solution; but in the one it is applied while the plaster is still wet, and in the other, after it has dried, the union in this case being effected by soaking the stucco with lime-water before the application. In each, but especially in the first, the colour is chemically united to the lime of the mortar, in this respect differing from distemper and oil-paint. That *fresco buono* was well known to the Romans is proved by the statement of Vitruvius: 'Colours when carefully applied on moist stucco do not therefore fade, but last for ever. Stuccoed walls when well executed do not easily become dirty, nor do they lose their colours when they require to be washed, unless the painting was carelessly executed after the surface was dry.' In Roach Smith's *Illustrations of Roman London*[1] is figured a busy scene on the tombstone of a painter at Sens, in which the deceased is represented as engaged in his craft. It so well illustrates the process that we give the description *verbatim*: "The subject represents the decoration of a corridor in fresco painting. A low scaffold is constructed, partly on tressels, and partly resting upon the basement of the corridor. Upon this scaffold are the painter and his plasterer. The latter is on the right side of the relief, and is exhibited in the act of laying on the thin finishing coat of plaster (*intonaco*) for the painter, who is following him. He has his float in his left hand, while his right hand is thrust down into a pail of water, most likely to reach a brush to sprinkle the rough coat or ground, so as to render it sufficiently moist to receive the *intonaco*, or thin cement of lime, which in general would not be thicker than a crown-piece. The painter is following the plasterer, to lay on his colours while the plaster is still wet. He appears as if resting one foot upon a stool, which, perhaps, has also a tablet of mixed colours upon it. Behind him is a cylindrical box, in which, it may be imagined, he has his rolls of paper or parchment with designs of the work he is engaged upon. There is a short ladder to mount the scaffold, by the side of which is a stool, with a tablet of colour upon it; and close by this the painter's assistant is mixing tints; and his action is energetic, no doubt to indicate haste. This is quite in accord with the modern practice of fresco-painting, which requires every department to be conducted with rapidity as

[1] P. 61. See also Wright, *Celt, Roman, and Saxon*.

well as with skill. The assistant must always have the tints ready mixed, and in sufficient quantity for the work. Under the arch of the corridor, at the left side of the relief, is the director or master-designer. He is seated with an open book or tablet before him, and appears to be studying or reviewing the design."

Whether this was strictly the process in Roman Britain is uncertain. Messrs. Hope and Fox consider that the Silchester mural paintings are *fresco secco*; and certainly the distemper-like film of colouring, sharply defined, but not easily separated from the surface of the stucco, which may be frequently noticed, favours this view. Perhaps both methods were employed. In *fresco secco* it is customary to rub the stucco with pumice in order to make it more pervious to the lime-water, and the same end may have been gained by the scraping with a toothed tool which our Roman examples often underwent before the application of the colours. The medieval frescoists were well aware of the high solvent powers of saccharine solutions upon lime, and used milk or infusions of sweet worts for mixing their colours; and it is likely that the Romans were also acquainted with this property. The effect of *fresco secco* is not so brilliant and transparent as that of true fresco; but it has the advantage of requiring less haste in its execution.

The colours used in fresco are necessarily such as resist the action of lime. In Roman Britain they were fewer and less costly than those of the Pompeian and other Roman frescoes of Italy. The reds consisted of oxide of iron in some form or other; terra vert was used for green; lapis lazuli for blue; yellow ochre for yellow; chalk or a fine white lime for white; and carbon in some form for black. Chalk was mixed with most of these, and its effect was to lighten the shade, and in the case of blue to produce a blue-grey; while various blendings of the colours gave rise to chocolates, browns, purples, etc. It is probable that vegetable colours were also used.

The walls were sometimes painted in monochrome, red being preferred; but polychromatic decoration, even if of a very simple character, was the rule. Messrs. Hope and Fox, in describing some of the Silchester designs, state that "after the walls had received their finishing coat of plaster, the setting-out lines of the decorations were drawn upon the surface of the wall with some sharp instrument. The ground colours were then applied,

and the incised lines showing through them served as guides for the application of the ornamentation. Traces of these setting-out or guide lines are to be seen in the fragments last referred to, and, as they are filled by the ground colour, they must have been incised in the plaster surface before it received any colouring. This process appears to have been used in decorative painting in Pompeii."[1] These incised lines, however, were not always used. It is probable that the outlines of the chief features of the designs were sometimes indicated by chalk or crayon; and in the case of simple rectilineal designs, the painter may have relied solely upon the straight-edge.

The designs were more varied in style, and were generally lighter and freer in treatment, than those of the mosaic pavements. This was due in part to their execution with the brush, which allowed of freedom of treatment and fineness of detail; and in part to a sense of artistic appropriateness which recognized that the decoration of walls should contrast in its light and airy effect with that of floors made to walk upon. Moreover, they differed, certainly as a rule, in kind. The usual geometrical framework, with its bands of braidwork and twist, of the floors, was rarely, if ever, reproduced on the walls. A dado was a common feature, and the decoration of this was appropriately heavier in character than that of the wall above, panelling, painted to represent an incrustation of marble, being of frequent occurrence; whereas the fragments from the wall above often exhibit stripes and foliage, and occasionally animal and human forms. A frieze next the ceiling there may also have been, but our country provides no clue as to its decorative treatment. A few examples will give the reader a better idea of the mural decorations of the Romano-British home than a general description.

In a Roman house at Ickleton,[2] the prevailing wall-colours were "red; red and white, with black stripes; blue; a greyish blue spotted with red and yellow; yellow, red, and white." The walls of some of the rooms had a rich red ground divided into panels by borders of various colours, in which were interspersed birds, flowers, stars, and fanciful objects; those of other rooms were ornamented with human figures, or nymphs and genii. The spotted work referred to was of common occurrence, and was produced by splashing from a brush. At Acton

[1] *Archaeologia*, lv, p. 248.

[2] *Brit. Arch. Assoc.* iv, p. 360.

Scott,[1] " fragments of decorated painting showed that the ground had been white or very light-coloured, upon which panels appear to have been marked out by lines of dingy purple and red, the ornaments being round spots arranged by fours and fives pyramidically. On one fragment was painted the head of a bird with a branch in the beak, indicating that ornamental designs had been painted on some of the panels." According to Roach Smith, the Roman mural decorations in London were, as a rule, finely executed, and consisted usually of panels of red, dark grey or black, with borders of various colours, the panels often containing arabesques, with birds and other animals, stars, and fanciful objects ; and at Great St. Helens a red ground with bordering of white and dark blue or purple was covered with a delicate trellis pattern in yellow, in the openings of which were various devices, as a youth in yellow, starlike flowers in yellow or white, etc.

The Silchester reports, as might be expected, throw much light upon these decorations. In one room these included " golden-coloured draperies and imitations of yellow and grey marbles, no doubt suggesting the marble wall-linings of important buildings." In another, " grounds of yellow, red and blue, with traces of lines and ornaments on them, and painted imitations of marble, apparently a breccia." Another was " adorned with paintings representing panels of different coloured marbles separated by bands of porphyry ; the marbles being a pale grey, almost white, with bluish streaks or bands, and a yellow, with blotches of pink and dark red veins." In another, " brilliant red panels with purple borders seem to have covered the walls, while other fragments showed grounds of gold colour, blue, and green." [2] In the corridor of another house the fragments suggested " that the general arrangement of the colouring may have been a series of panels divided by broad vertical red bands, the panels being alternately white, with painted draperies, and yellow. There may have been a dado in imitation of pink marble, and a frieze in white ornamented with green circles." The pattern on the fragments of apparently a dado " exhibited a series of rings and hollow squares of a grey colour upon a dark claret-red ground, linked together by lines of ears of barley, with inter-

[1] *Coll. Antiq.* vi, p. 121.

[2] *Archaeologia*, lv, p. 248 ; lvi, p. 233 ; lvii, p. 241 ; lviii, p. 19, etc.

mediate centres of blue rosettes. From the circles alternating with the squares ran diagonal lines of leaves and berries, which touched at their ends the bands of green and black bordering the composition above and below. From the angles of the squares ears of barley started diagonally also." [1]

At Caerwent many examples of decorative wall painting have been discovered, and the large accumulation of fragments in the temporary museum promises a rich reward to careful study. In one of the houses portions of the painted dado remained, and on it "there seems to have been an attempt to represent architecture in perspective, in far-away imitation of the later Pompeian styles of decoration; but the colouring is crude in the extreme, and the intention of the artist by no means clear." This room had two, if not three, earlier coats of plaster, each decorated, and on the earliest the colours were finer and the drawing better than in the later decorations.[2] In one of the large rooms on the north side of the Basilica the decorative scheme was a series of broad-panelled pilasters arising from a marbled plinth, with intervening panels bordered with yellow and on a rich red ground. The panels appear to have been in imitation of green marble, but had suffered much from decay.[3] In another house the dado appears to have been of a dark blue-grey colour divided into panels, and on one fragment is shown a hare in light brown. The border above was extremely graceful, consisting of a series of interlacing arches or semicircles in red on a yellow ground, enclosing conventional foliage in green; while the walls above were in pale blue with yellow decorations apparently forming large panels on a red ground.[4]

[1] *Archaeologia*, lv, p. 250.
[2] *Ib.* lviii, pp. 142, 400.
[3] *Ib.* lx, p. 129.
[4] *Ib.* lx, p. 453.

CHAPTER XII

DECORATED MOSAIC PAVEMENTS

EVEN a plain monochrome mosaic has a certain pleasing quality, which depends upon its finely broken surface and the mellowing effect of the cemented joints upon the general tone, and this is enhanced by the impression of care and skill that the construction gives rise to. These plain mosaics were chiefly used for the floors of corridors and less important rooms, and were usually in 'coarse' work of tile or sandstone *tesserae*. Between these plain floors and the elaborate ones of Woodchester and Bignor, a host of examples might be brought forward, presenting a series of transitions which baffle exact classification; yet a careful study of their ornamentation will show that the seemingly endless diversities are due to the different compoundings of comparatively few decorative elements.

Beginning with the simplest ornamentation, two different treatments soon become evident—the panel and the diversified surface. A plain mosaic may be enclosed within a simple striped border of a contrastive colour, which may form an edging, or be at some distance from the sides of the room, leaving a margin, narrow or wide, and of the same or a different colour from that of the field. On the other hand, the general surface may be diversified with parallel bands of contrastive colours, or two colours may be arranged in alternate squares or triangles, copied perhaps from pavements of marble or stone slabs of different colours; or, again, by a 'pepper and salt' intermixture of cubes of different colours, probably suggested by *opus signinum*. In simple fashion we thus have two decorative elements, the border and the diversified surface, and both may be, in fact, usually are combined in the richer pavements.

In a general way the more sumptuous mosaic floors consist of a decorated panel surrounded by a wide margin of monochrome

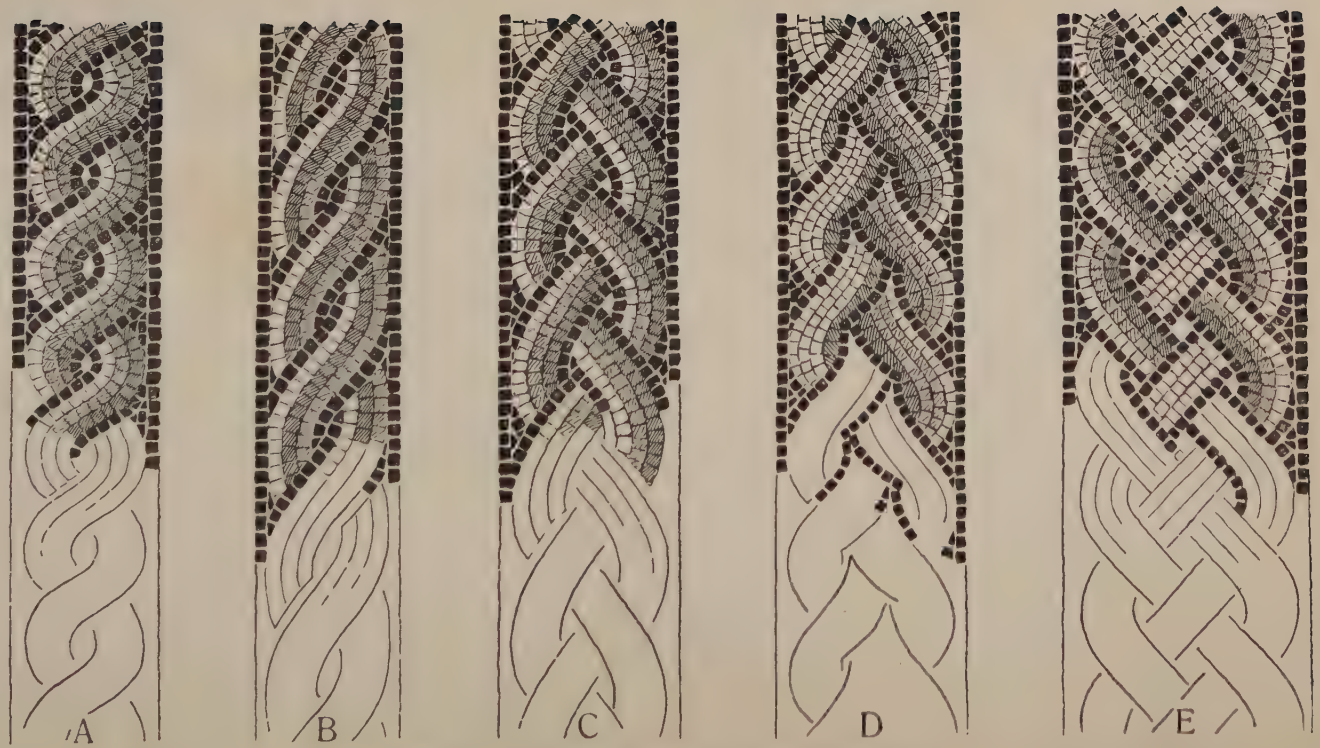


FIG. 87.—Mosaic Pavements. Examples of Borders.

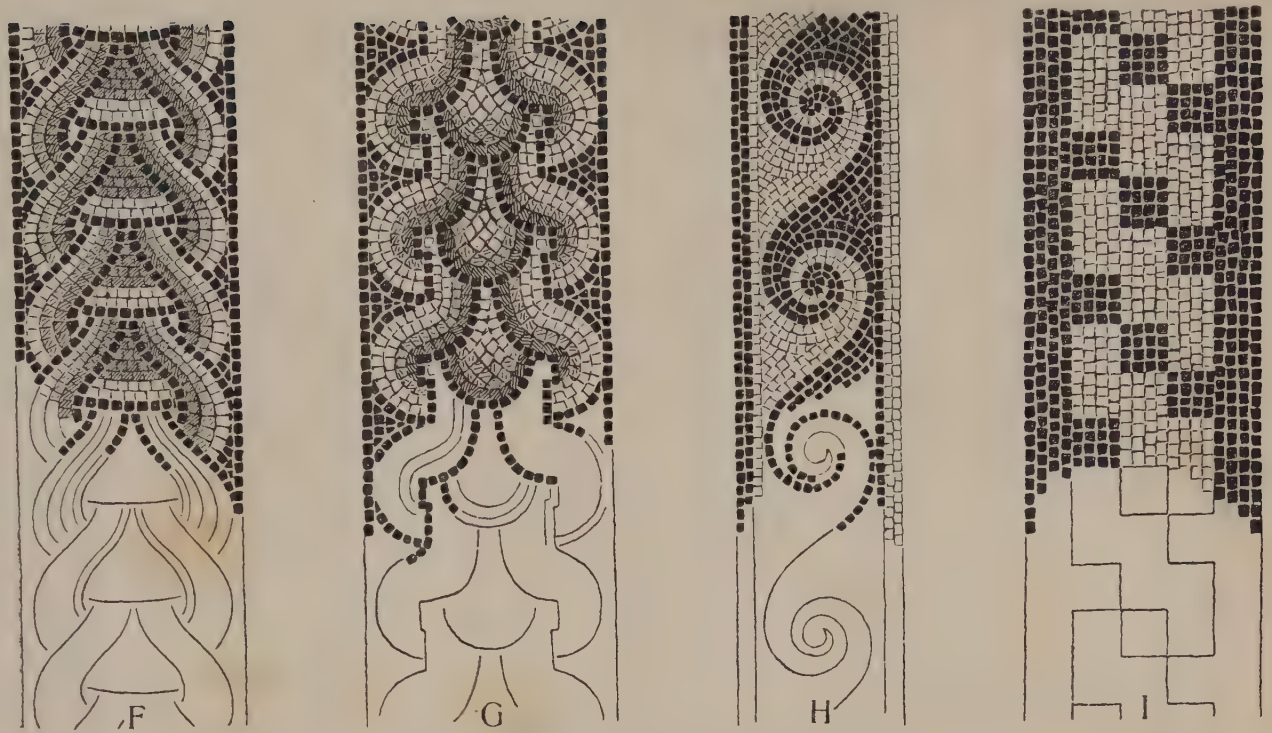


FIG. 88.—Mosaic Pavements. Examples of Borders.

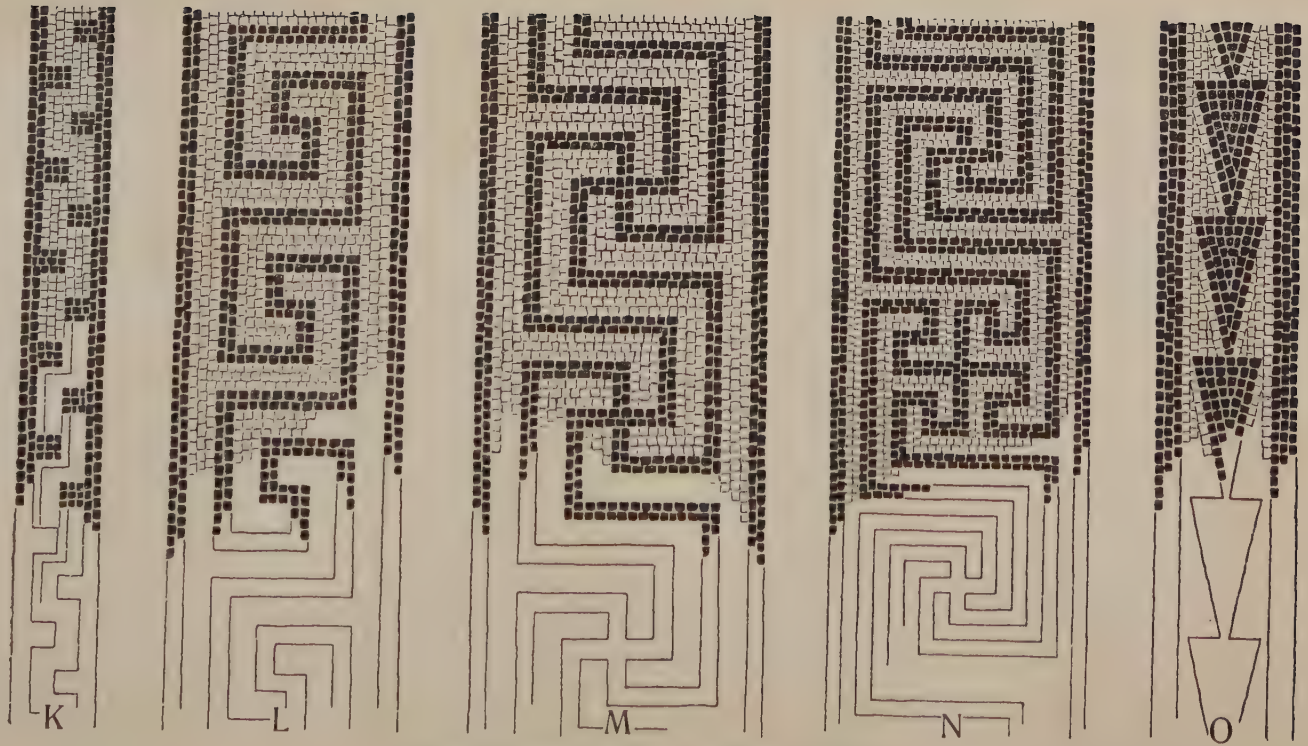
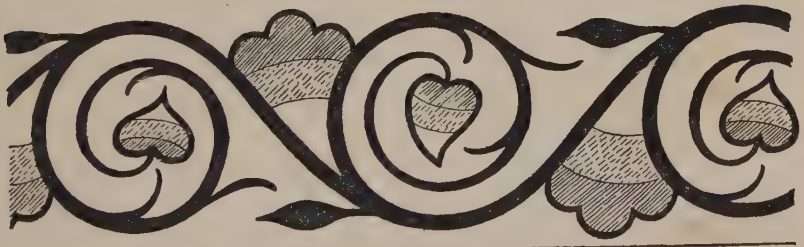


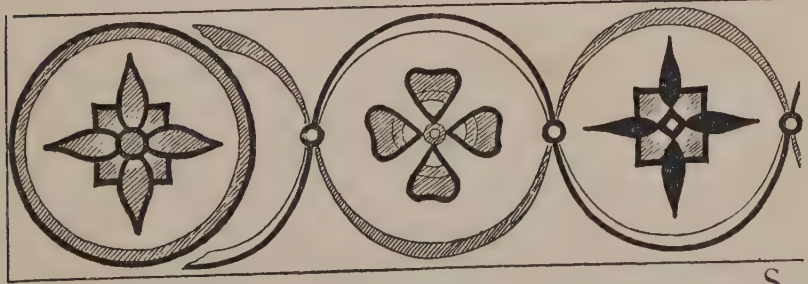
FIG. 89.—Mosaic Pavements. Examples of Borders.

P

Q



R



S

FIG. 90.—Mosaic Pavements. Examples of Borders at Silchester, Woodchester and Cirencester.

in coarser work. The panel is represented in the modern room by the central square of carpet or rug, which leaves exposed to view a margin of the floor itself. This margin is usually of unequal width, and it was often so in the Roman rooms, but not because the panel was of a different form from that of the floor. The Roman rooms were, as a rule, more symmetrical than the modern, yet the panel was frequently nearer one wall than the others. We may reasonably infer from this that the furniture was placed against the walls, and that the wider margin or margins were to accommodate the larger pieces, the panel being open to view. The margins would thus be partly covered ; but apart from this, their plain monochrome would have the advantage of not detracting from whatever beauty of form and tone the furniture possessed. The panel was sometimes of mat-like smallness, and in a general way the narrowest margin was on the side where the room was entered.

The decorated panel was almost invariably surrounded by a border. This occasionally consisted of one or more plain stripes, but usually it was of an ornate description ; in fact, these ancient mosaics owed much of their beauty and character to their borders. The favourite design was the guilloch, a simple twist or loose cable of two strands, as A and B, Fig. 87, or rarely of three, or a braid of three or more plaited together, as C, D, and E. A variant of the braid was the ' chain ' pattern, F, Fig. 88, and G was a rare form of this. The wave pattern was not uncommon, and the crests were nearly always developed into spirals, as H. A simple border consisted of checks, and I represents one of the forms based upon it. The fret or ' key ' pattern was a favourite, and it varied in complexity, the more complex forms being known as the labyrinth, K to N, Fig. 89. O was also frequent, and the triangles were often short, with concave sides. The finest borders were of scrolly and more or less conventional foliage, of which P, Q, and R, Fig. 90, are good examples from Silchester, Woodchester, and Cirencester ; [1] while S, also from Silchester, may be regarded as an interlaced ribbon pattern. The ornamentations of the borders were almost invariably on grounds which contrasted in colour with those of their respective panels and margins, and frequently the difference was accentuated by brilliant edgings.

[1] *Archaeologia*, lvi, p. 245. *Remains of Roman Art, Corinium*, p. 36.

The patterns of the borders were usually continuous, but in the richer mosaics they were divided into compartments, an alternation of square and long compartments being common. In these, the squares usually contained a conventional flower, an interlacement, or other ornament, and the long compartment a band of guilloch; or the square was represented by the vortex of a labyrinth, its two lines being produced to enclose a length of guilloch or other ornamentation. There were also compound borders consisting of several bands of these patterns. The great pavement at Woodchester [1] had a highly elaborate border of the kind. Its outermost member was a red stripe; then followed in succession a simple key pattern of shaded red on a dark ground, a wide labyrinth in black on a white ground, a narrow braid of shaded red on a dark ground, and an extremely wide member formed of square compartments filled with elaborate geometrical ornamentations, and last and innermost a second guilloch.

The decoration of the field of the panel varied greatly, but two prevailing treatments may be distinguished: (1) diapers or small repeating patterns, and (2) the division of the space into large compartments or medallions. The two, however, somewhat merge into one another: a repeating compartment pattern, for instance, may be regarded as a diaper on a large scale.

The simplest diapers were those of contrastive checks and triangles referred to a few pages back. More frequently they were line or 'bar' patterns, which gave rise to various geometrical reticulations. The simple lattice pattern from Wroxeter [2] shown in A, Fig. 91, is produced by two series of lines parallel with the sides of the pavement and intersecting at right angles. At Wellow [3] a similar pattern was obtained by diagonal lines instead. In these the lines were continuous; but by a combination of parallels and diagonals and their periodic suppression, various intricate reticulations were produced, as another diaper from Wellow, B. Still more intricate were the diapers based upon the labyrinth, C, from Aldborough,[4] being a good example. In these the 'keys,' or vortices, may be sufficiently separated to allow of intervening squares containing small ornaments, as on a pavement in House, 1, XIV, Silchester.[5]

[1] Lysons, *Woodchester.* Morgan, *Rom. Brit. Mosaics*, p. 74.
[2] *Uriconium*, p. 200.
[3] *Rom. Brit. Mosaics*, p. 100.
[4] Smith, *Remains of the Roman Isurium.*
[5] *Archaeologia*, lv, p. 227.

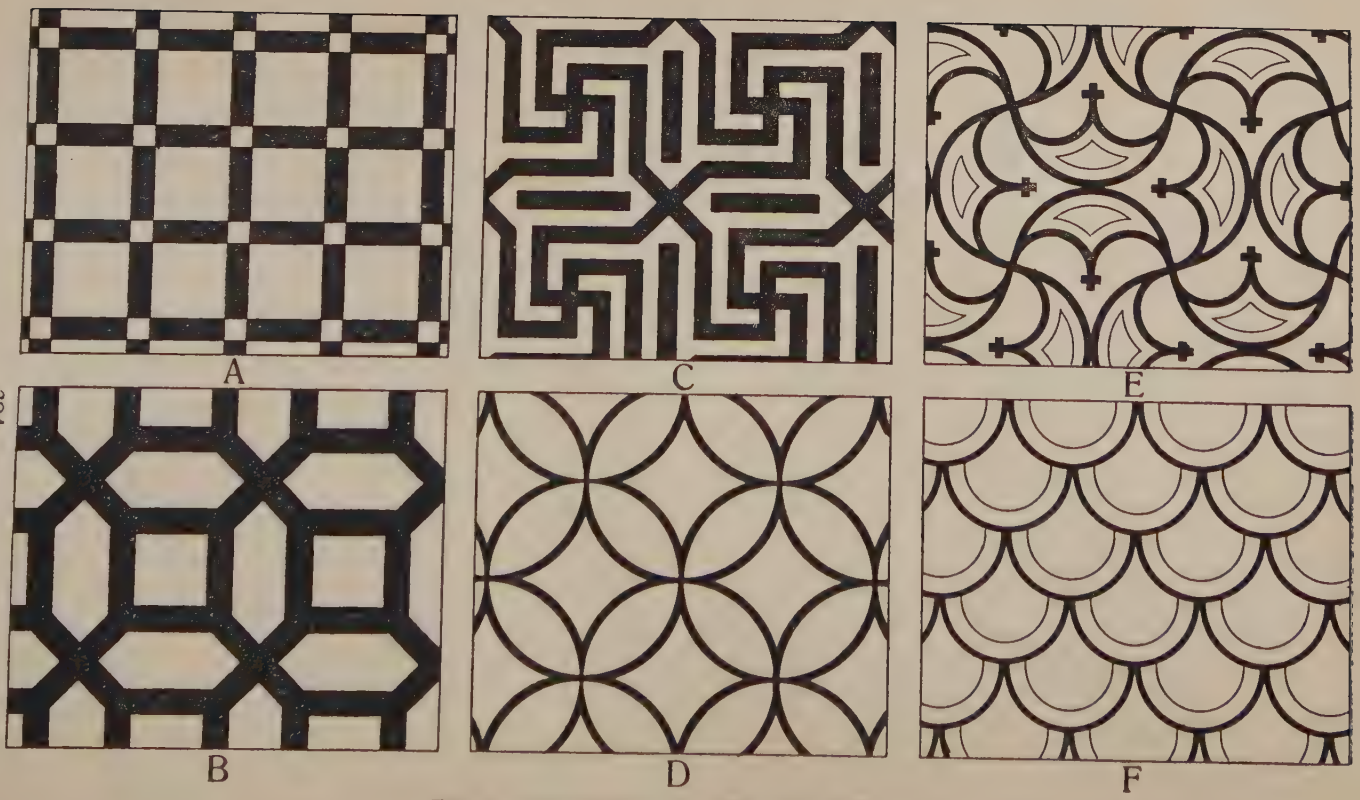


FIG. 91.—Mosaic Pavements. Examples of Diapers.

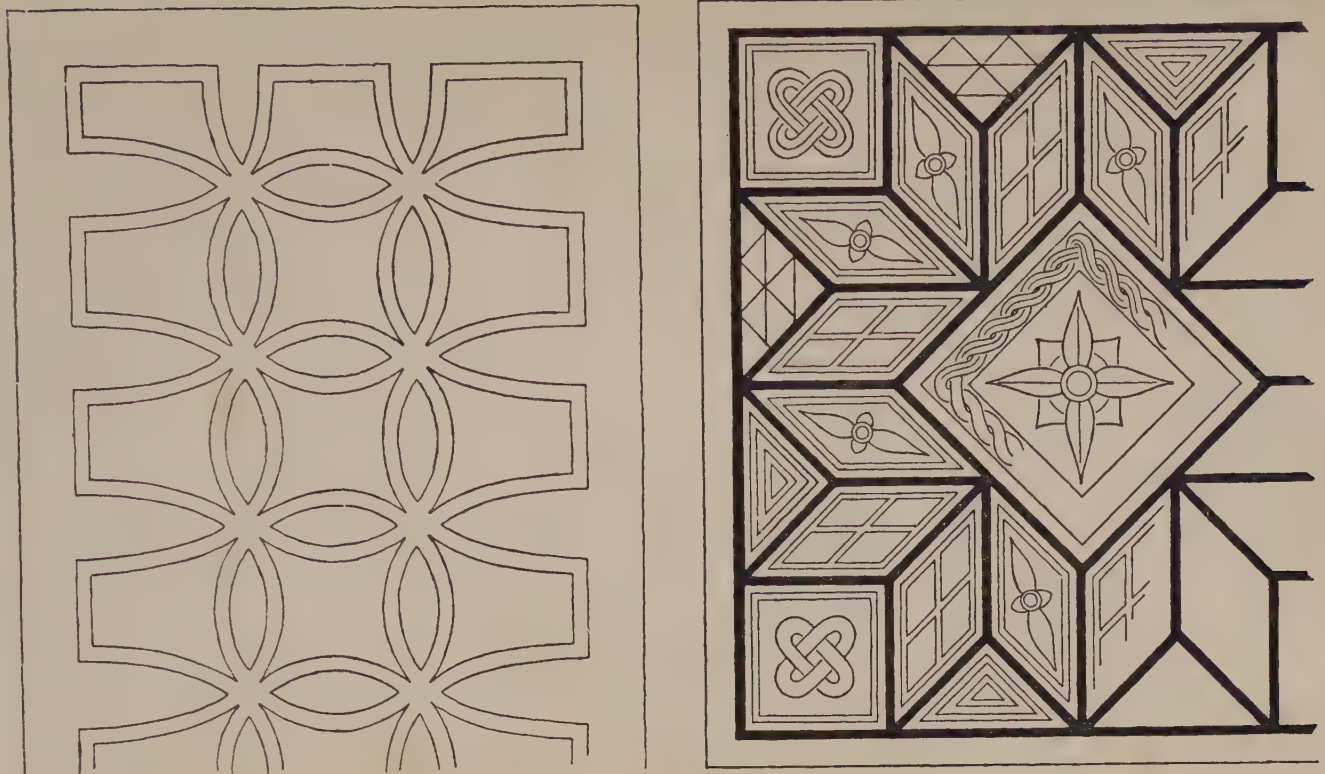


FIG. 92.—Mosaic Pavements, Castor and Bignor.

So far we have considered rectilinear diapers: a highly characteristic Roman diaper was curvilinear, as in E, from Lydney.[1] Here the pattern consists primarily of two series of continuous wavy lines crossing the field at right angles, with the curves of every two opposed to one another, the result being a network of curvilinear triangles resembling axe-heads. This pattern varied considerably in its subordinate ornamentation, and it served frequently as a decoration for borders, while single 'axe-heads' were sometimes used as fillings for spandrels and other small compartments. Intersecting circles, as in D, form a pleasing diaper occasionally met with, and its effect was heightened by small ornaments in the openings. Sometimes the circles interlaced, as at Pitney, giving rise to a chain-armour network. The scale pattern, F, was decidedly rare. It should be mentioned that diapers more usually appear as the decoration of compartments than of the general field of a mosaic; also that the frequent modern treatment of a powdering of flower sprigs on a monochrome ground is never found on Romano-British pavements.

We now pass *per saltum* to the second type, the most characteristically Roman, and to which our richest pavements belonged. In this the decorative foundation was the division of the field into a number of spaces which enclosed the chief ornamentation. Two methods by which these spaces were produced may be distinguished. In the one, they were the openings in a system of bands, which, like the tracery of a Gothic window, constituted the framework of the design; and just as the tracery frames the painted subjects of the lights, so the bandwork was the setting of the ornaments of the compartments. In the other method these spaces took the form of medallions or 'reserves,' each with its own proper border, and simply resting, so to speak, on the field; but they were mostly a subordinate element in 'framework' designs. The chief feature, however, of both were the ornaments—geometrical, conventional flowers, heads and figures, mythological groups, and so forth—which the compartments and medallions enclosed, and upon which the mosaic-workers lavished their best efforts; but, as already stated, no sharp line can be drawn between the two types. Such a pavement as that found at Castor,[2] Fig. 92, cannot be strictly classed with

[1] *Lydney Park*, plates xiv. and xvii.

[2] *Vict. Hist.* Northamptonshire, i, p. 172.

either. Its pattern, based upon the intersecting circles, is too large to be regarded as a diaper, and is, moreover, not a repeating one ; at the same time, it fails to attain to our second type, as the openings do not contain ornaments.

The simplest framework designs are those in which the bands cut one another at right angles, as in Fig. A, B, C. The first presents the scheme of a panel in House 2, XXIII,[1] Silchester, in which the four oblong compartments, each containing an ornament, were divided by plain bands, and the whole was enclosed with a braided border. An early floor in House 2, XIX,[2] was divided as the second into nine compartments by cabled bands, and the

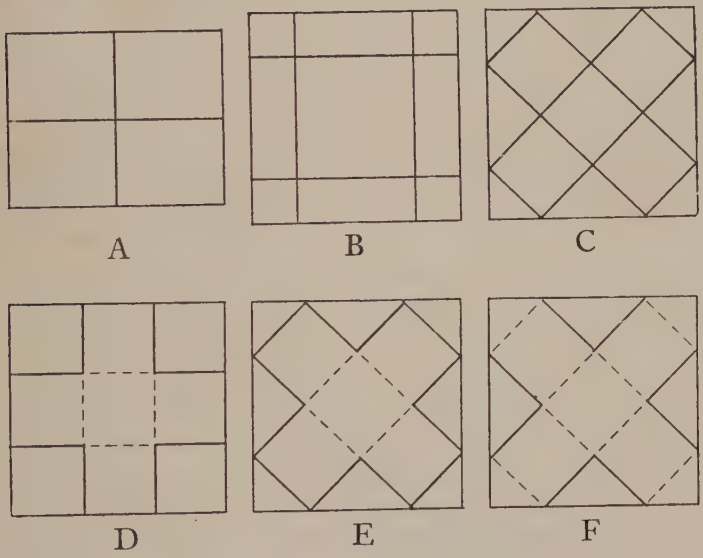


FIG. 93.—Compartments formed by continuous and discontinuous rectilinear 'frameworks.'

large central one probably contained the chief feature of the design. The panel of one of the magnificent pavements at Brading[3] had its cabled bands arranged saltire-wise, as in the third, all the compartments, including the nine marginal triangular spaces, having mythological subjects.

In the preceding examples the divisional bands were con-

[1] *Archaeologia*, lvii, p. 233.
[2] *Ib.* lvi, p. 245.
[3] *Rom. Brit. Mosaics*, p. 234.

tinuous; more often they were suppressed at intervals. In D, E, F are shown simple examples, all of which occur in Romano-British work. If the framework design is based upon two series of divisional lines, the one series traversing the field at right angles to its sides, and the other at some other angle, a variety of geometrical and reticulated patterns will result, according to how these lines are partially suppressed. Bignor [1] supplies some fine examples of intricate patterns thus produced, and one of the simpler ones is shown in Fig. 92. The divisional lines run at right angles and at an angle of 45°. This combination gives rise to squares, triangles, rhombs and other figures, and usually by further suppression to larger stellate, octagonal or square spaces reserved for the principal ornaments. Occasionally the bandwork is in two series, a primary and a secondary, the latter producing a subordinate network of patterning external to the principal compartments. The same combination gives rise to the pavements of octagonal compartments, an unusually fine example of which at Leicester [2] is shown in Fig. 94. There are nine of these compartments, containing geometrical rosettes, conventional flowers, and in the central one a square of interlacement surrounded by a circular cabled border, the whole being enclosed with a beautiful compound border. A different disposition of one set of the divisional lines may give rise to hexagons, which may be arranged honeycomb-fashion, or, as in a pavement in House 1, XXIV, Silchester,[3] Fig. 94, leaving between every four a lozenge.

Contrasting with the above in the crudeness of its design was a pavement at Caerwent,[4] Fig. 95. It was in three colours only, and its ornamentation almost wholly geometrical, with a compound border of triangles. The repeating pattern of Fig. 95 was found at Brislington near Bristol,[5] and consists of a series of large squares which cover the intersections of ornamented bands crossing the field at right angles, the intervening cruciform spaces being filled with large lozenges. Pavements of similar type have been found at Caerwent,[6] Mansfield Woodhouse,[7] and

[1] Lysons, "Villa of Bignor," *Rom. Brit. Mosaics*, p. 203.
[2] *Reliquary and Illus. Archaeologist*, v, p. 28.
[3] *Archaeologia*, lv, p. 225.
[4] *Ib.* lviii, p. 140.
[5] Barker, *Bristol Museum Handbook*.
[6] In the Welsh Museum.
[7] *Archaeologia*, viii, p. 364.

elsewhere ; but in some the function of the underlying bandwork, which gives cohesion to the Brislington design, is lost sight of, giving rise to a somewhat aimless pattern. Even the element of repeat may disappear, as in the case of a pavement at Wellow,[1] Somerset, in which the space was parcelled out into a number of rectilinear compartments of various sizes, with no attempt at symmetry or unity of design, much as if so many pieces of mosaic from other floors had been fitted together as best they might be.

In the examples above, the main divisions of the decorative scheme were rectilinear : we now consider a few in which they were curvilinear. One of the Lydney pavements, Fig. 96,[2] has a cabled border which bifurcates near each corner to cut off a small quadrant-shaped space, and the central space contains a medallion which encloses a conventional cornflower, and is itself enclosed within two intersecting square cabled borders—an ornamentation not uncommon in Roman mosaics. As the design is only suitable for a square space, a border-like panel of blue and white checks was added to one side to accommodate it to the oblong room—a frequent device; and sometimes the square had two such panels, one opposite the other. In a pavement at Lincoln,[3] Fig. 96, a similar composition was carried a stage further, by the introduction of a semicircular compartment on each side between the quadrants, while the centre was occupied by a medallion containing an eight-pointed star. Each of the semicircles contained a dolphin, each quadrant a heart, while the four intervening spaces or spandrels had each a cruciform rosette. A beautiful pavement at Cirencester was similar only with squares instead of quadrants in the corners.

But the most frequent, and at the same time the simplest, curvilinear treatment was that in which a square panel enclosed a large circle, which, touching the border on the four sides, left four spandrels in the angles. To this type belonged some of our grandest pavements, as the large medallion provided an admirable field for the display of mythological and other pictorial subjects. A small but beautiful example, Fig. 97, was discovered in Leadenhall Street, London, in 1803.[4] It had a double border, the outer of elongated lozenges containing

[1] *Rom. Brit. Mosaics*, p. 100.
[2] *Lydney Park*, plate vii.
[3] *Rom. Brit. Mosaics*, p. 138 ; Fowler's *Plates of Mosaics*.
[4] C. Roach Smith, *Roman London*, plate xii. ; *Rom. Brit. Mosaics*, p. 180.

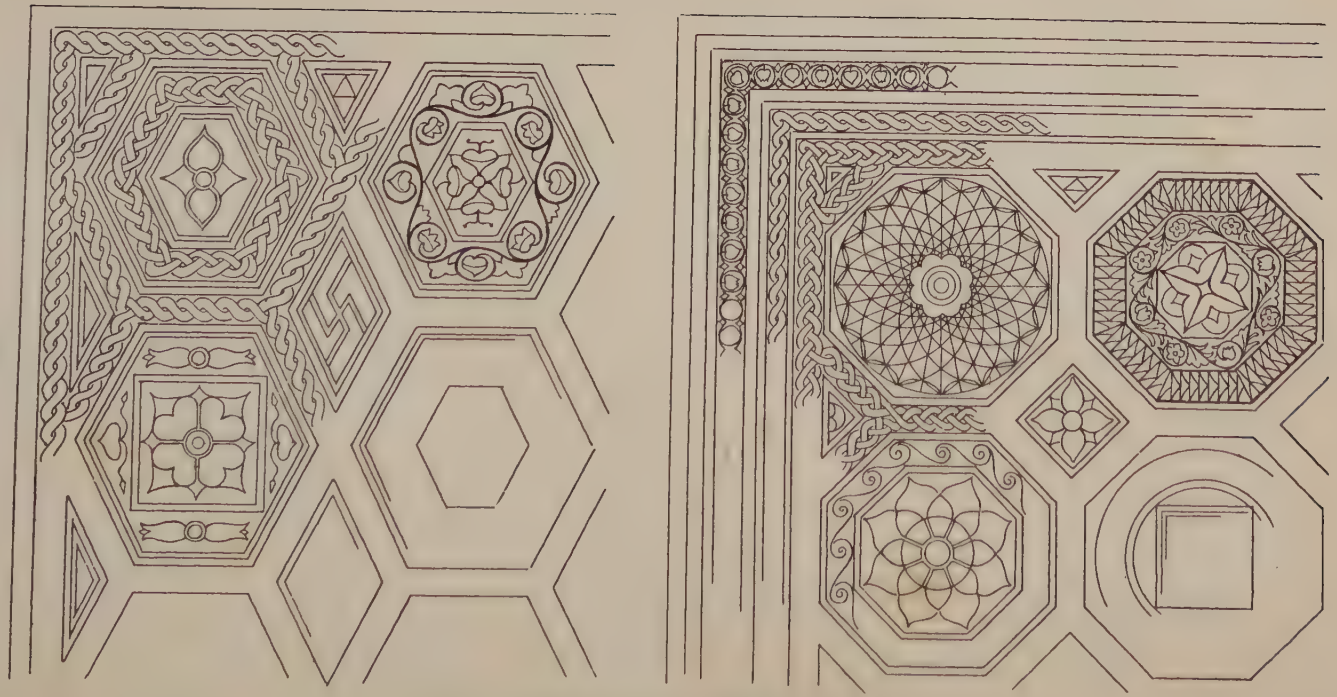


FIG. 94.—Mosaic Pavements, Silchester and Leicester.

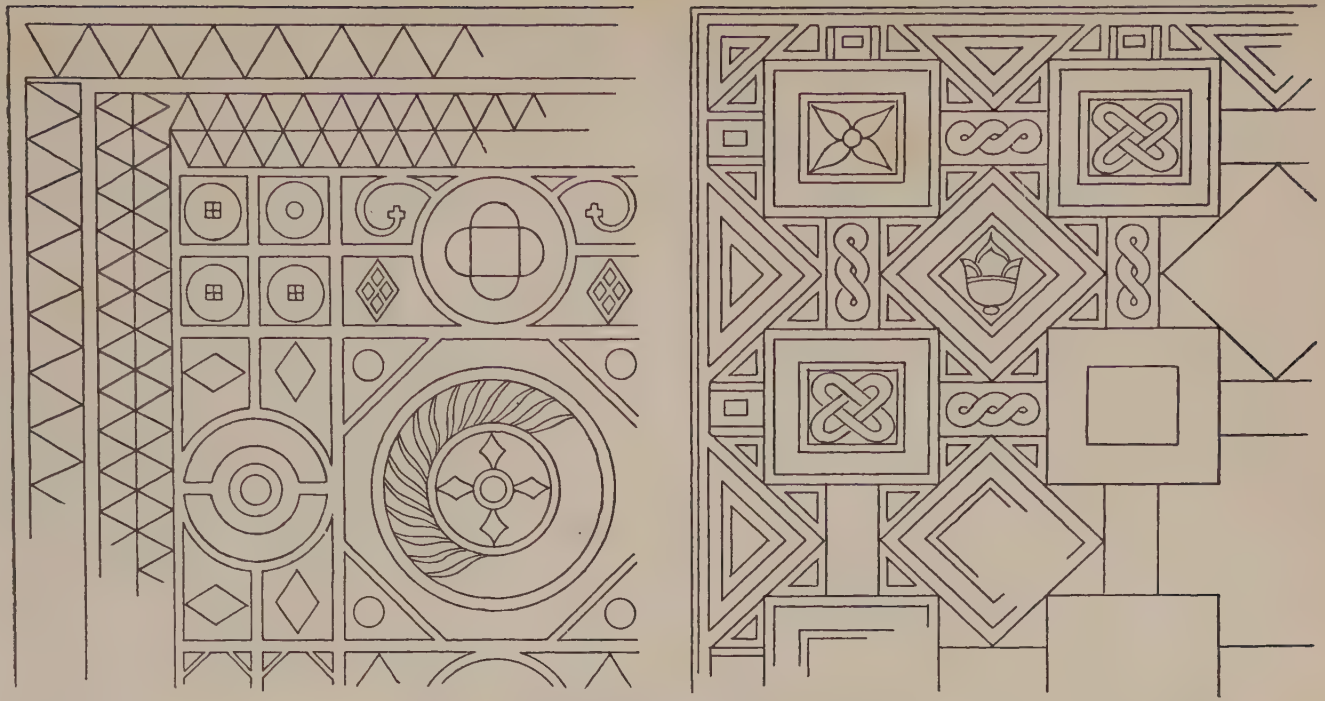


FIG. 95.—Mosaic Pavements, Caerwent and Brislington.

FIG. 96.—Mosaic Pavements, Lydney Park and Lincoln.

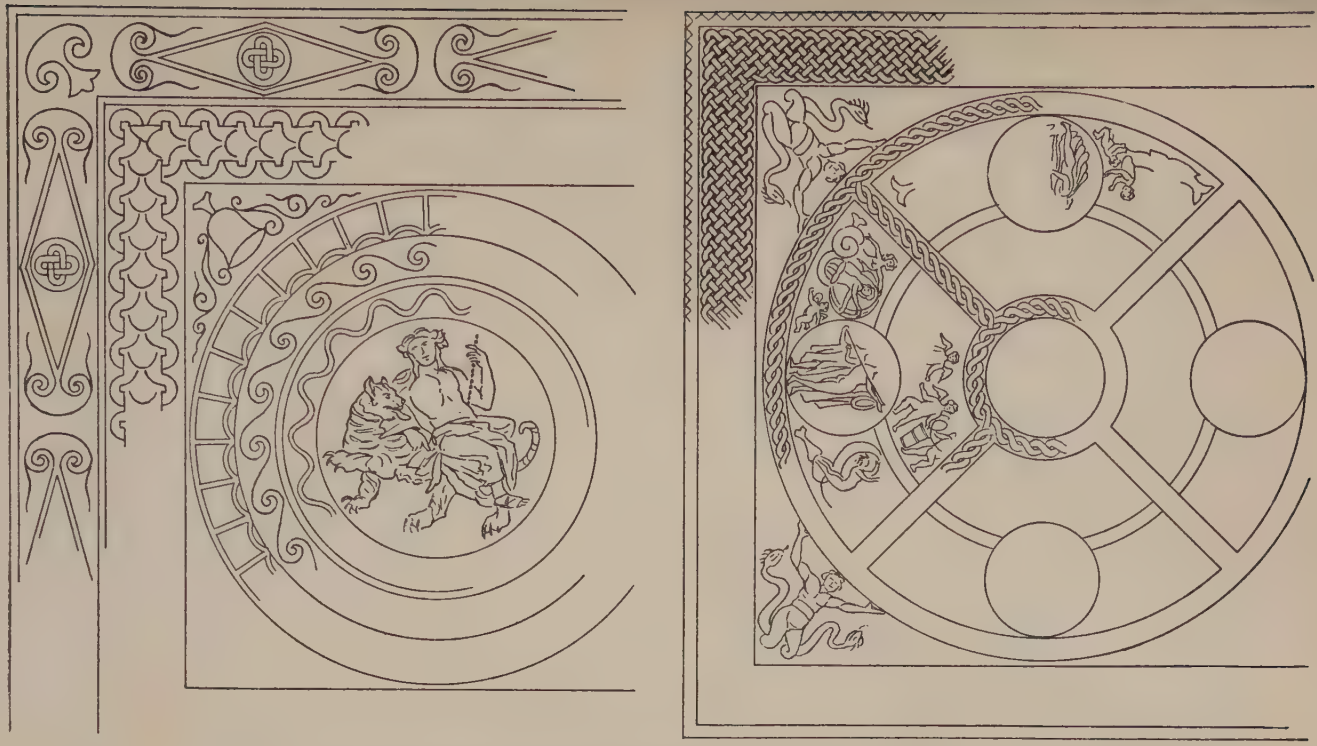


FIG. 97.—Mosaic Pavements, Leadenhall Street, London, and Horkstow.

interlacements and ending with 'axe-heads' and scrolls, and the inner, of a rich and unusual guilloch (G, Fig. 88). The border of the medallion was triple, the outer member consisting of shaded squares, the middle of the wave pattern, and the inner of a wavy line on a shaded ground. The subject of the medallion was Bacchus reclining on a panther; while in the spandrels were cups and 'axe-heads' placed alternately. The finest portions of this mosaic were executed in glass *tesserae*. The famous Woodchester pavement was of the same type. The general border has already been described. The medallion had a triple border, consisting of a wide band of scrolly foliage between two narrower ones of braidwork. The interior was divided into two concentric zones and a central octagon by rich borders. In the first were representations of various beasts; in the second, those of birds; and in the central octagon, fishes; while at the foot of the last was Orpheus playing the lyre, a favourite subject on the richer pavements. In each of the spandrels were two female figures, probably naiads.

The circles of these pavements were sometimes divided into compartments, and this was usually effected by bands radiating, spoke-like, from an inner circle. An elaborate pavement, Fig. 97, of the kind was found at Horkstow, Lincolnshire,[1] in 1796. The divisional bands were cabled, and each of the four wedge-shaped compartments contained a medallion, of which three retained their subjects—each a pair of figures, one apparently being Theseus and Ariadne holding a thread, an allusion to the story of the Labyrinth—all on blue grounds. The space external to these medallions had a red ground, and was divided into an upper and a lower tier by a coloured band. In the former tier were seahorses and other sea-monsters carrying nereids, and in the latter, to judge from the remaining fragments, scenes in which winged cupids played a prominent part. The subject of the central circle was defaced. Large tritons filled the spandrels, and the whole composition was framed with a wide border of braidwork in three colours, and an external narrow one with an edging of stepped trangles. The beautiful pavement, Fig. 98, from Wemberham, Somerset,[2] presents an unusual decorative treatment. Its chief features were an outer circle enclosing a

[1] *Rel. Brit. Romanae*, i; *Rom. Brit. Mosaics*, p. 136.
[2] *Vict. Hist. Somerset*, i, p. 306.

square, which in its turn enclosed a circle with a ' key ' border ; and within this were two interlaced squares with an inner circle containing a four-petalled flower, the various spandrels and other intervening spaces being embellished with ornamentation.

Of quite a different style was another pavement at Brislington, Fig. 98. The outer border, of which only portions remained, was of two widths. The wider, a variant of the key pattern, was at the foot of the design, but was probably repeated at the head ; while the narrower was at the sides and appears to have been the ordinary key pattern with enclosed oblong compartments. The inner border was the cable, and its outgrowths enclosed small rectangular compartments, one in each corner and one midway on each side, the latter containing dolphins, but the former were defaced. Upon the white ground of the field were a central square with a wave-pattern border, containing a cantharus, and four quatrefoil medallions surrounded with cabled borders and containing rosettes. The intervening portions of the ground were embellished with graceful arabesques of foliage and ' axe-heads.' This unusual design thus combines ' framework ' with ' medallion ' ornamentation.

So far we have chiefly considered the decorative framework or skeleton, and the examples given by no means exhaust the patterns which the various arrangements of bands and medallions give rise to, but they are sufficient to give an idea of their general character. Incidentally, also, the reader will have gained an insight into the ornaments of which the framework was the setting. These, as a rule, were so distributed that the central one was the chief feature of the composition, and they may be classed as follows : (1) geometrical figures, interlacements, conventional rosettes and foliage, and diapers ; and (2) pictorial representations of divine and human beings, of animals and plants, and of inanimate things. The first have been sufficiently indicated in both text and drawings ; but the second are too important, not only from an art point of view, but from their bearing on the religious and social conditions of the Romanized people, to be dismissed without further notice.

Many pavements with pictorial delineations have been found in this country. In some of them these delineations are limited to one or only a few of the compartments, the rest being filled with ornamentation of the first class, and of these the great

Woodchester pavement is a notable example. In others, like that of Horkstow, figure subjects crowd every available space, and to this they owe their richness, the framework being often of a simple and unobtrusive character.

Gloucestershire and Somerset are unusually rich in figured pavements. One of the smaller pavements at Woodchester was decorated with bacchanalian figures, and two boys holding up a basket of fruit and inscribed "Bonum Eventum," one of the twelve deities who presided over the affairs of husbandry. A finely executed pavement of nine octagonal compartments at Cirencester[1] had in the central one apparently a centaur, and in the rest, so far as they remained, Actaeon at the moment of being turned into a stag and attacked by his own hounds, Silenus reclining backwards on an ass, Bacchus with his thyrsus, and in three of the corner compartments, Flora, Ceres, and Pomona, with appropriate symbols for spring, summer, and autumn—the fourth probably having for its subject, winter; while in the small squares between the compartments were Medusa's heads, a dancing figure, etc. Another pavement[2] had for its central feature Orpheus seated playing his lyre, surrounded with birds and beasts interspersed with trees, in two circles. At Withrington, near Cirencester, Orpheus similarly treated, a large horned head of Neptune, a horseman hunting, and various birds and fishes were delineated on pavements; and at Chedworth, dancing figures and the four seasons.

At Pitney,[3] in Somerset, were discovered early in the nineteenth century several remarkable pavements, the largest of which had a central compartment with a wheel-like arrangement of eight others around it, the corners of the panel being cut off to form four triangular compartments. In these were four female heads, each with a cornucopia, and in the central octagon a semi-nude female seated, with a slender rod or sceptre and a cylindrical vessel. In the intervening wedge-shaped compartments were four female and as many male figures alternately arranged. The females were similar to the central figure, all semi-nude, and all seated except one. Two held similar cylinders, from one of which seeds (?) were falling; another had a similar rod; and at the foot of another was an open book. Three of the

[1] *Roman Art, Corinium*, p. 38.
[2] *Ib.*, p. 32.
[3] *Vict. Hist. Somerset*, i.

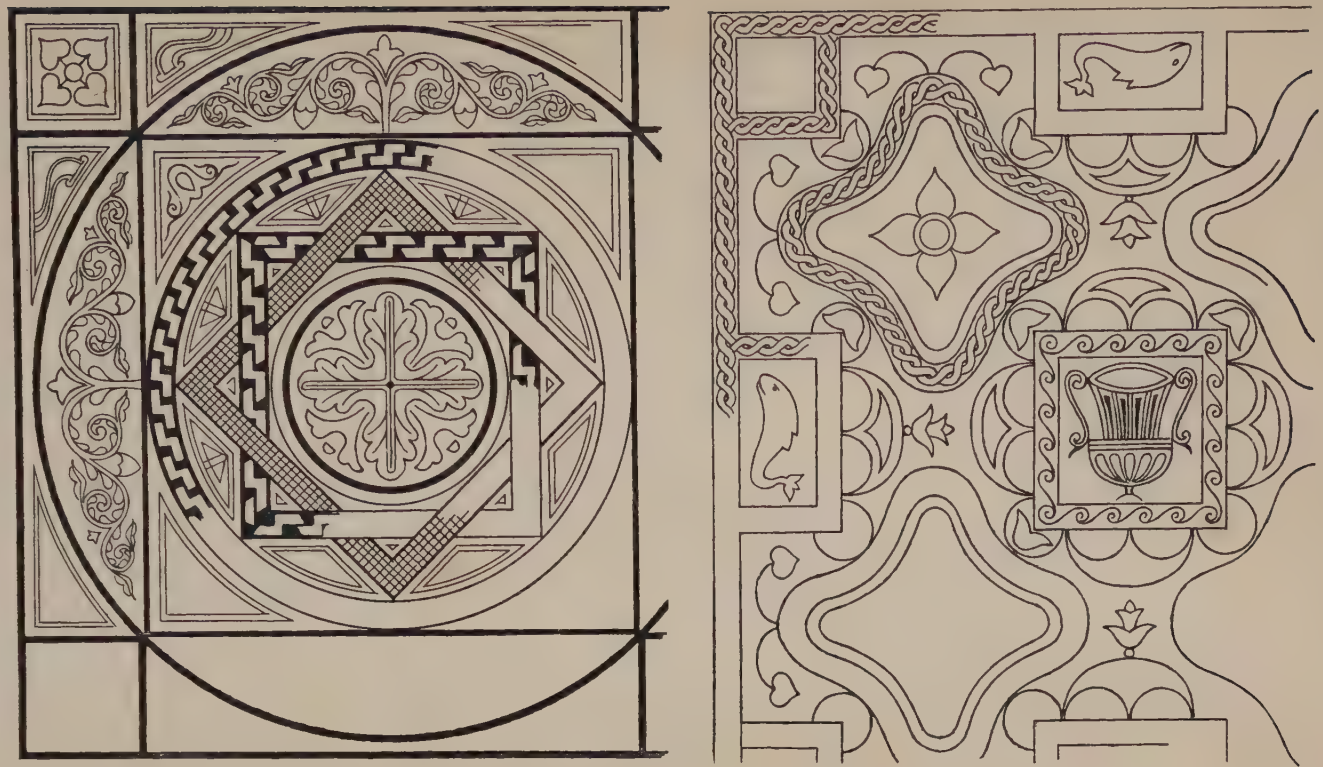


FIG. 98.—Mosaic Pavements, Wemberham and Brislington.

males had a chlamys over the arm, but were otherwise nude. One of these was horned and held a trident (Neptune ?); one held a plain rod; and the third a short crook. The draped male was in a Phrygian cap and breeches and held a similar rod to the last (Orpheus ?). The subject of this pavement has not been satisfactorily explained. Dr. Haverfield suggests that it represents "a series of deities or mythological personages chosen without regard to their coherence or congruity, unless indeed the artist had in view some illustration of the loves of the gods."

At Littlecote,[1] in Wiltshire, the pavement of a large double room with three alcoves was discovered in 1730. The panel of the smaller division was divided into five compartments after the manner of the Horkstow pavement. In the central compartment was Apollo with his lyre, and in the four around it four females seated on beasts, the first on a fawn, the second on a panther and holding a bird, the third on a bull and holding a branch, and the fourth on a goat, probably symbolizing the seasons. The decoration of the larger pavement was geometrical, but was flanked with two narrow compartments, in each of which was a cantharus, the one between two panthers, and the other between sea-leopards with dolphins.

Several pavements, discovered at Frampton,[2] Dorset, in 1796, were rich in figure subjects. One was that of a large double room with an alcove. The general design of the panel of the larger division of this room, which was unfortunately in a dilapidated condition, resembled the Cirencester pavement on page 299. The subject of the central medallion was a horseman spearing a lion. Those of the semicircular compartments, as also of two of the corner-squares, were quite destroyed, but the remaining two of the latter were a youth in Phrygian cap and playing a pipe of reeds, seated, with a female apparently addressing him, and the same youth reclining and seemingly dying as the female was holding a torch reversed. Probably the subjects of the other two squares were scenes from the same story. The border of this panel contained dolphins, with the head of Neptune on one side. The panel of the smaller division had a central medallion flanked with two narrow compartments, the subject of the former being Bacchus seated on a leopard, and those of the latter a man fighting a leopard, and another man hunting two animals. On

[1] *Archaeologia*, viii, p. 97. [2] Lysons' monograph.

another Frampton pavement were Jupiter, Mars, Neptune, Apollo, and Bacchus, with the head of Mercury several times repeated. On the pavement of the corridor were the heads of Neptune and four nereids in octagonal compartments, with dolphins in the intervals.

Several remarkable figured pavements have been found in Hampshire and the Isle of Wight. In the central medallion, at Thruxton,[1] was Bacchus crowned with leaves, with a cantharus in one hand and the thyrsus in the other, seated on a tiger or leopard, and in the four spandrels the four seasons. The subject of the smaller division of a double room at Bramdean[2] was the days of the week. The square panel was reduced to an octagon by its four corners being cut off, and these triangular spaces contained four cups. The octagon was divided, wheel-fashion, into eight lateral compartments, and a central circular one with a Medusa's head. In the former still remained Sol with radiated crown and whip; Luna with a crescent; Mars helmeted and with a spear; Mercury with his caduceus; Neptune with his trident; and Venus with her mirror. The remaining two compartments probably contained Saturn and Bonus Eventus. The pavement of the larger division had, in the centre, an octagonal medallion with Hercules and Actaeon for its subject, while around it were four other medallions within interlaced squares, each containing a male head, the minor spaces being occupied with vases, dolphins and arabesques. Along one side of this panel was a narrow compartment with a triton between two centauro-tritons, each carrying a nereid.

The pavements at Brading[3] were more remarkable for their subjects than their execution. That of the great double room was divided into rectangular compartments by a simple arrangement of cabled bands, and all except the smallest contained figures. Most of the pavement of the larger division was destroyed. In the corners were heads emblematic of the seasons, and in the only large compartment left were Perseus holding up the Gorgon's head, and Andromeda, both seated on rocks. Between the piers separating the two divisions of the room was a smaller panel containing a philosopher with a sundial on a column,

[1] *Rom. Brit. Mosaics*, p. 221.
[2] *Archaeologia*, xxii, p. 52. *Rom. Brit. Mosaics*, p. 223.
[3] *Rom. Brit. Mosaics*, p. 234.

a globe, and a cup. The compartments of the smaller division were almost perfect. Medusa's head was the central subject, and between it and the corners were four square compartments, each containing a pair of figures: a shepherd, with a pipe of reeds, and a dancing nymph; a draped female with a sceptre, offering fruits (?) to a male who has an agricultural implement (Ceres and Triptolemus ?); a man threatening a female with a double-headed axe (Lycurgus and a bacchante ?); and the traces of a man chasing a female (possibly a satyr and a bacchante). Between these were four triangular compartments, each with a head crested with a pair of wings and blowing a horn—the four winds. More remarkable still was another pavement of this house. It was very imperfect, but sufficient remained to show that in its four corner quadrants were the four seasons, and in the central medallion a female head with a sceptre. In the three remaining but imperfect oblong compartments of the sides were the following: a fox under a tree approaching a domed structure; a *retiarius* attacking his opponent (over whom he has thrown his net) with a trident and dagger; and a curious cock-headed man, with clawed feet, facing a small building reached by steps, on the other side of which were two winged, lion-like animals. This cock-headed figure is identified by Dr. Haverfield[1] with Abrasox, or Abraxus, "a strange, mystical figure connected with obscure forms of religion or magic, which prevailed widely in the later Roman Empire and were closely related to Gnosticism." The pavement of the corridor had a central square, with Orpheus seated and playing his lyre to several animals, including a monkey.

The pavements opened out at Bignor in Sussex, about a century ago, were especially fine, and, like those of Woodchester, owed their richness to the intermixture of geometrical designs and figures. On one, the rape of Ganymede was the subject of the smaller circular medallion, while the larger enclosed a central hexagonal piscina surrounded with six compartments of the same shape containing dancing nymphs. On another pavement, winged cupids, some dancing and others engaged in gladiatorial conflicts, occupied narrow compartments; while in a semicircular alcove of this room was a medallion containing a female head with a chaplet of flowers and surrounded with

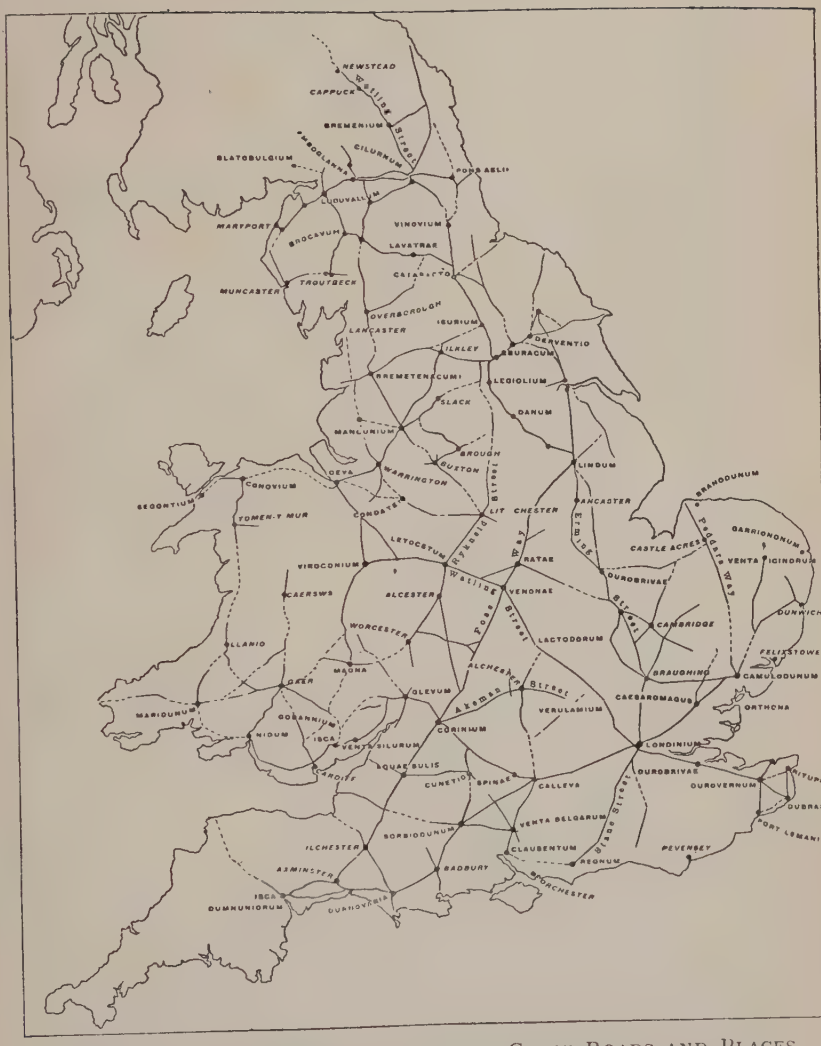
[1] *Vict. History, Hampshire*, i.

a nimbus, from which extended graceful festoons. Another pavement had for its central feature a medallion of Medusa's head.

Besides the beautiful pavement at Horkstow already described, was one divided into compartments in a similar manner, with Orpheus playing his lyre and attended by animals in the centre; and on another was depicted a chariot race, in which four *bigae* were engaged, one coming to grief through the loss of a wheel.

In perusing this short description of the pictorial subjects of the Roman mosaics of this country, the reader will have observed that, in spite of the enigmatical nature of some of them, they were, as a rule, derived from classical sources, and that their artistic treatment was equally classical. The exceptions, such as the cock-headed being at Brading, which certainly related to some late cult, were very few. Mythological subjects greatly preponderated, and these, so far as they can be identified, related to the earlier paganism. This is remarkable, when it is considered that many, perhaps most, of these mosaics belonged to late Roman times, when the 'old gods' were largely displaced by the introduction of new cults. Mithraism and Christianity can hardly be said to have found a place in them. It is possible that the youth in Phrygian cap and breeches on the Pitney pavement was Mithras and not Orpheus, as suggested on page 308. The only definite Christian symbol yet discovered on these pavements was the chi-rho monogram at Frampton, but it is doubtful whether it formed part of the original design. The story of Orpheus was early pressed into the service of the Church, and its prevalence *may* have been due to Christian influence. The frequent cruciform rosettes and other devices were certainly only ornamental. Equally remarkable was the absence, so far as we know, of the native divinities and those of the Continent introduced by the soldiery, to whom, as also to Mithras, many altars and sculptures have been found. The prevalence of the older paganism on the mosaics suggests several explanations, all probably more or less true. The persistence of custom was probably the chief reason. There is little evidence of religious enthusiasm in Roman Britain; and it may well have been that the followers of Mithras and of Christ willingly conformed to the current custom. The late proprietor of Frampton, in inserting the Christian symbol into his pavement, was

content to leave the head of Neptune, near which he placed it, intact. On the other hand, the followers of the newer faiths may have been mostly of the poorer classes, who could ill afford the luxury of mosaic pavements, or, if they could, would prefer those of purely geometrical designs.



MAP OF ROMAN BRITAIN SHOWING THE CHIEF ROADS AND PLACES

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